

Bowdoin College Institutional Biosafety Committee

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Recombinant DNA Research Protocol Application Form

Because NIH funds some research at Bowdoin, all research utilizing recombinant DNA conducted at or sponsored by Bowdoin must comply with the guidelines.
http://oba.od.nih.gov/rdna/nih_guidelines_oba.html

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5! Do you intend to express a gene that encodes a protein that is foreign to the host (not including in *E. coli* K-12)?

Yes No

6! Will this work create resistance to therapeutically useful antimicrobials or antivirals?

Yes No

7! Will this work enhance the virulence of a pathogen or render a non-pathogen virulent?

Yes No

8! Will this work increase the transmissibility of a pathogen?

Yes No

9! Will this work alter the host range of a pathogen?

Yes No

10! Will this work enhance the risk an organism may pose to the environment (e.g. providing herbicide resistance to a plant species.)

Yes No

11! Could this work enable the evasion of diagnostic/detection modalities (e.g., microencapsulation to avoid antibody-based detection and/or the alteration of gene sequences to avoid detection by established molecular methods)

Yes No

12! Will you conduct large scale growth experiments involving an excess of 10 liters of culture?

Yes No

13! Do you intend to clone any genes that encode products that are toxic for vertebrates?

Yes No

If you work in a non-exempt host/vector system, a transgenic organism, or if you are answering "Yes" to any of the questions 4

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Recombinant DNA Research Protocol Application Form
Part II

Principal Investigator Information

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- 15! Transgenic Organisms: Please describe the 1) Source species and strain; 2) species and strain; 3) a description of the DNA to be recombined, including the approximate size and % of genomes
- 16! Biosafety Level: Which biosafety level is adequate for your work (see descriptions below) and why? Please describe what actions will take to maintain this level within your lab.
- 17! Containment Plan: Please provide a description of the biological and physical methods used to assure containment of recombinant materials and transgenic organisms. Will minor events such as power outages cause an accidental release? What are the potential risks of accidentally introducing this organism into the environment?
- 18! Emergency Plan: Please describe how your transgenic organisms should be handled in an emergency where your routine containment plan becomes impossible (fire, spill, accidental release etc). Are animals to be destroyed or moved to a second location? Describe the second location and the personnel who will help and how they will be recruited.

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Biosafety level 1

This level is suitable for work involving well characterized agents known to consistently cause disease in healthy adult humans, and of minimal potential hazard to laboratory personnel and the environment (CDC).

It includes several kinds of bacteria and viruses including hepatitis non-pathogenic Escherichia coli as well as some cell cultures and infectious bacteria. At this level precautions against the biohazardous materials in question are minimal, most likely involving gloves and some sort of facial protection. The laboratory is not necessarily separated from the general traffic patterns in the building. Work is generally conducted on open bench tops using standard microbiological practices. Usually, contaminated materials are left in open (but separately indicated) rubbish receptacles. Decontamination procedures for this level are similar in most respects to modern precautions against everyday microorganisms (i.e., washing one's hands with antibacterial soap, washing all exposed surfaces of the lab with disinfectants, etc.). In a lab environment all materials used for cell and/or bacteria cultures are decontaminated via autoclave. Laboratory personnel have specific training in the procedures conducted in the laboratory and are supervised by a scientist with general training in microbiology or a related science.

Biosafety level 2

This level is similar to Biosafety Level 1 and is suitable for work involving agents of moderate potential hazard to personnel and the environment. It includes various bacteria and viruses that cause only mild disease to humans and are difficult to contract via aerosol in a lab setting, such as hepatitis A, B, and C, influenza A, Lyme disease, dengue fever, Salmonella, and

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The facility is either in a separate building or in a controlled area within a building, which is completely isolated from all other areas of the building. A specific facility operation is prepared or adopted. Building protocols for preventing contamination often use negatively pressurized facilities, which, if compromised, would severely inhibit the containment of an outbreak of aerosol pathogens.

Within work areas of the facility, activities are confined to Class III biological safety cabinets, or Class II biological safety cabinets used with positive pressure personnel suits ventilated by a life support system. The Biosafety Level 4 laboratory has special engineering and design features to prevent microorganisms from being disseminated into the environment. The laboratory is kept at negative air pressure, so that air flows into the room if the barrier is penetrated or breached. Furthermore, airlocks are used during personnel entry and exit.