**MU Recombinant DNA/Infectious Agent/**

**Biological Toxin Application Form**

(revision approved by the IBC on January 27 2022)

All research involving recombinant DNA (rDNA), synthetic nucleic acids (sDNA), infectious agents, human cell lines, Select Agents or other biological toxins must be reviewed by the Institutional Biosafety Committee regardless of funding source.

IBC Administrative Use (leave this section blank):

|  |  |  |
| --- | --- | --- |
| rDNA Registration Number: |  |  |
| Biosafety Levels |  |  |
| Animal Care Approval required: |  |  |
| IRB Panel Approval required: |  |  |

Applicants must complete Sections I-VII as directed. If you have questions, please contact Vincent Sollars, IBC Chair, at 304-696-7357 or sollars@marshall.edu. Consult the NIH Guidelines for information on rDNA regulations. Approved applications will be valid for a period of three years from the time of approval.

Section I: General Information

|  |  |
| --- | --- |
| 1. Principal Investigator: | M.D. [ ] Ph.D. [ ] Other: |
| 2. Department/Division: | Email:  |
| 3. School/College | Office Phone: |
| 4. Lab Address: | Cell or Alternate Phone: |
| 5. Office Address: |
| 6. Date of Application: |
| 7. Grant or Project Title: |
| 8. If federally funded, provided grant or contract # |
|  |
| 9. List all professional personnel, employees and students involved in the project who will be working with these materials. Attach an additional sheet if needed.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Job Title | Lab Address | Phone Number |
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| 10. Have you or members of your staff received Hepatitis B vaccination? If no, specify vaccine needed and contact IBC chair. If other vaccines are needed, contact IBC chair. | Yes [ ] No [ ]If no: Vaccine Type:  |
| 11. Do you or members of your staff request medical surveillance? If yes, contact IBC chair.  | Yes [ ] No [ ] |
| 12. Are claiming exemption from rDNA regulations? | Yes [ ] No [ ] If yes, see section 13c. |

13. If your research involves use of rDNA, synthetic nucleic acids, infectious agents, human cell lines, Select Agents or other biological toxins, please complete sections 13a through 13j.  **Your responses should follow each lettered section.** Include any other data that you feel has important bearing upon the safety and the proposed containment level for this project.

1. Provide a 1-2 paragraph **lay** summary of your proposed experiments including hypothesis, experimental design and methods.
2. Provide a 1-2 paragraph **scientific** summary of your proposed experiments including hypothesis, experimental design and methods.
3. For rDNA/synthetic nucleic acid research, if you believe your work is exempt as described in section III-F of the NIH Guidelines, offer an explanation for the exempt status. Additional information on rDNA/sDNA exempt status can be found at <https://osp.od.nih.gov/biotechnology/faqs-about-experiments-that-are-exempt-from-the-nih-guidelines/>. The IBC chair will review requests for exempt status. If the chair concurs that the application warrants exempt status, a letter of approval will be sent to the applicant. If exempt status is not warranted, application will be submitted for full IBC review. **Even if exempt status is requested for rDNA/synthetic nucleic acid research, sections 13a through 13j and all of section II must be completed.**
4. For rDNA/synthetic nucleic acid research, explain and justify the use of pathogenic organisms, synthetic nucleic acids or viral vectors.
5. For rDNA/synthetic nucleic acid research, identify and describe the actual and potential risk(s) to humans associated with all rDNA, synthetic nucleic acid molecules, pathogenic organisms, or viral vectors used in the research.
6. For rDNA/synthetic nucleic acid research, specifically identify the gene(s) of interest, including a description of any associated hazards (i.e. genes that are chemically synthesized or amplified or genes that code for toxic, oncogenic, or otherwise hazardous peptides).
7. If research involves the use of animals, identify and describe animal biosafety risks (i.e. excretion of virus from the animal, what will happen to the animal after the experiment, and any ecological advantages or environmental risks that experimental animals might acquire through the experiment).
8. Describe any special precautions required for containment and personal safety. Include procedures for transport or shipment of biological materials or animals associated with this project. This information should be included in your lab-specific protocols as well.
9. For experiments that will be conducted at BSL-2 or above, please describe the experience and training of all individuals listed on this registration form that qualify them to work at the proposed containment level. For individuals who lack training and experience, please describe your plan to train them to a level of proficiency that will allow them to work safely under these conditions. Your training plan should include completion of the online CITI courses and attendance of IBC-sponsored training sessions.
10. Please insert written **lab-specific safety protocols and procedures** that will be followed for all BSL-2 or enhanced BSL-2 work described in your protocols (see NIH Guidelines Appendix G for Biosafety Level criteria). Procedures must address both safety to laboratory personnel and containment of laboratory animals. Insert lab-specific BSL-2 protocols here.

Please complete the following sections as directed.

Section II: rDNA or Synthetic nucleic acid use application

Section III: Select Agents and Toxins

Section IV: Other Pathogens (not Select Agents)

Section V: Other Toxins (not Select Agents)

Section VI: Dual Use Research of Concern

Section VII: Human Blood, Sera or Tissue

Section VIII: Human Cell Lines

**Section II: Recombinant DNA (rDNA) or Synthetic Nucleic Acids**

**EXPERIMENTS COVERED BY THE NIH GUIDELINES**

“Part III of the NIH Guidelines covers six categories of experiments involving recombinant or synthetic nucleic acid molecules: (i) those that require Institutional Biosafety Committee (IBC) approval, RAC review, and NIH Director approval before initiation (see Section III-A), (ii) those that require NIH/OBA and Institutional Biosafety Committee approval before initiation (see Section III-B), (iii) those that require Institutional Biosafety Committee and Institutional Review Board approvals and RAC review before research participant enrollment (see Section III-C), (iv) those that require Institutional Biosafety Committee approval before initiation (see Section III-D), (v) those that require Institutional Biosafety Committee notification simultaneous with initiation (see Section III-E), and (vi) those that are exempt from the NIH Guidelines (see Section III-F).” From the NIH GUIDELINES FOR RESEARCH INVOLVING RECOMBINANT OR SYNTHETIC NUCLEIC ACID MOLECULES (NIH GUIDELINES), page 15.

14. Does your project involve use of rDNA or synthetic nucleic acids as defined by the NIH Guidelines? [ ] No **[ ]** Yes.

**If yes, please complete questions 15-31.**

The NIH Guidelines define recombinant and synthetic nucleic acids as follows:

*(i) molecules that a) are constructed by joining nucleic acid molecules and b) that can replicate in a living cell, i.e., recombinant nucleic acids;*

*(ii) nucleic acid molecules that are chemically or by other means synthesized or amplified, including those that are chemically or otherwise modified but can base pair with naturally occurring nucleic acid molecules, i.e., synthetic nucleic acids, or*

*(iii) molecules that result from the replication of those described in (i) or (ii) above.*

*(From Section I-B of the NIH guidelines)*

15. Do the proposed experiments transfer a drug resistance trait to microorganisms that are not known to acquire the trait naturally? (Section III-A-1-a, V-B)[ ] No **[ ]** Yes

List the drug resistance genes:

16. Do the proposed experiments involve the cloning of toxin molecules with an LD50 of less than 100 nanograms per kilogram body weight? (Section III-B-1)[ ] No **[ ]** Yes

Provide toxin names:

17. Do the proposed experiments involve the deliberate transfer of recombinant material to human research participants? (Section III-C-1)[ ] No **[ ]** Yes

If yes, please contact the IBC chair.

18. Do the proposed experiments utilize Risk Group 2, 3, or 4 agents as a host-vector system OR as a source of genetic material for nonpathogenic prokaryotic or lower eukaryotic host vector systems? (Section III-D-1, D-2)[ ] No **[ ]** Yes

Name the agent(s) and Risk Group(s):

19. Do the proposed experiments involve the use of infectious or defective DNA or RNA viruses in the presence of helper virus in tissue culture systems? (Section III-D-3, III-E) [ ] No **[ ]** Yes

Name the viruses including the helper virus:

20. Do the proposed experiments involve the transfer of recombinant material to whole animals? (Section III-D-4) [ ] No **[ ]** Yes

21. Will recombinant material representing greater than two-thirds of a eukaryotic viral genome be transferred to whole animals? (Section III-D-4-a) [ ] No **[ ]** Yes

22. Will any of the proposed experiments generate transgenic animals? (Section III-D-4-b, 4-c, III-E-3) [ ] No **[ ]** Yes

Provide genus, species of transgenic animal:

23. Will transgenic rodents be purchased or transferred for this research? (Section III-F, Appendix C-VI) [ ] No **[ ]** Yes

24. Do the proposed experiments involve the genetic engineering of whole plants? (Section III-D-5, III-E-2) [ ] No **[ ]** Yes

If yes, please contact the IBC chair

25. Is there large Scale (> OR = 10 liters) production of rDNA/synthetic nucleic acid (Section III-D-6)?

[ ] No **[ ]** Yes .

If yes, please provide a description of production methods.

26. Do the proposed experiments involve the use of influenza viruses? (Section III-D-7)

[ ] No **[ ]** Yes. If yes, please contact the IBC chair before starting any work.

27. Will an rDNA or synthetic nucleic acid gene introduced or expressed in cells, tissues or animals? [ ] No **[ ]** Yes

If yes, describe the cloning vector or expression system (plasmid, viral vector, etc.), gene to be expressed and the cells, tissues or animals to be transfected. Attach a genetic map for each vector and indicate if the gene to be expressed is an oncogene.

28. For microbial systems (e.g. bacterial and yeast) involving rDNA or synthetic nucleic acid, describe the Host-Vector System (attach list if necessary).

29. Federal Register Reference 2019 NIH Guidelines:

The current Guidelines for Research Involving Recombinant DNA Molecules (NIH Guidelines) were originally published in the Federal Register on July 5, 1994 with later amendments. The most recent version of the document can be read or obtained at <https://osp.od.nih.gov/biotechnology/nih-guidelines/>. You will need to read sections I, II and III and the relevant appendices to complete the following sections. For your research, please list the appropriate subsection, appendix and containment level(s) for your research.

29A. Subsection(s). List all of the section III subsections that apply to your proposed work. Select from subsections IIIA - IIIF.

29B. Does your rDNA/synthetic nucleic acid work fall into exempt category? [ ] No **[ ]** Yes. If yes, explain why you believe it be exempt and list appropriate appendix(ices) from the NIH Guidelines that covers the work.

29C. Risk Group: List of all of the appropriate risk groups for your proposed work. Select from Appendices A, B and C in NIH Guidelines. Appendix: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

29D. Containment Levels: \_\_\_\_\_\_\_\_\_\_\_\_ Select from Appendix F, G, I, K, L, or M.

30. rDNA/synthetic nucleic acid approval is given by title only. If for grant purposes, you wish to change the title of an rDNA application that has been approved previously you may do so if:

 A. Containment levels remain the same as previously approved.

 B. Probes and rDNA vectors are the same.

 C. Host-Vector-Donor System is unchanged.

Do you wish to change the title of a previously approved application? [ ] No **[ ]** Yes

 Under the above conditions if you wish to make a change of title(s).

 A. Give approval # of referred registration.

 B. List new title(s).

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31. rDNA/synthetic nucleic acid certifications: I have read the NIH Guidelines and I agree to adhere to its rules and regulations regarding safe laboratory practices. I hereby apply for approval of my plans for experiments involving recombinant DNA and/or synthetic nucleic acid molecules. I agree to provide the IBC prompt written notification of any significant changes in these protocols or of any major accidents involving recombinant DNA and/or synthetic nucleic acid molecules. I agree to comply with NIH requirements pertaining to shipment and transfer of recombinant DNA and/or synthetic DNA materials.

I accept responsibility for the safe conduct of work with this material as indicated on any page of this form, and in any additional information submitted in connection with this application or updating or revising this application. I will ensure that all personnel receive appropriate training in regard to proper safety practices and personal protective equipment needed for this work and that all building occupants are educated when warranted.

I certify that all herein provided information, and any subsequent information submitted in connection with this application, is accurate and complete.

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Principal Investigator's Name (printed) Signature

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date

**Section III: Select Agents and Toxins**

32. Will you be working with any pathogens or toxins on the HHS and USDA Select Agent List? Yes [ ] No [ ]. Please review the lists given at <https://www.selectagents.gov/SelectAgentsandToxins.html>

**If yes, you must notify the IBC Chair, complete the Select Agent Registration form before obtaining the Agent and also complete parts 33 and 34.**

33. List the Select Agent **Pathogens** to be used and provide the appropriate biosafety level for each pathogen listed? Please see the online ABSA pathogen listing given at <http://www.absa.org/> to find the appropriate biosafety level.

34. List the Select Agent **Toxins** you will be using. For each toxin, describe methods for the safe handling of toxins and destruction of unused toxin and disposal of toxins?

**Section IV: Other Pathogens**

35. Does this project involve any human, animal, or plant microbial pathogens that are not Select Agents? Yes [ ] No [ ] If yes, please complete sections 36.

36. List the pathogens to be used and provide the appropriate biosafety level for each pathogen listed? (See online ABSA pathogen listing at <http://www.absa.org/>)

**Section V: Other Toxins**

37. Does this project involve the use of any biological toxins that are not Select Agents? Yes [ ] No [ ] If yes, please complete section 38.

38. List the other toxins. For each toxin, describe methods for the safe handling of toxins and destruction of unused toxin and disposal of toxins?

**Section VI: Dual Use Research of Concern**

The NIH Office of Science Policy defines Dual Use Research of Concern (DURC) as “… life sciences research that, based on current understanding, can be reasonably anticipated to provide knowledge, information, products, or technologies that could be directly misapplied to pose a significant threat with broad potential consequences to public health and safety, agricultural crops and other plants, animals, the environment, materiel, or national security.” *The United States Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern* describes the practices and procedures required by our institution to ensure that dual use research of concern is identified prior to the start of work and that appropriate risk mitigation measures are implemented.

The USG Policy defines “Life sciences as living organisms (e.g., microbes, human beings, animals, and plants) and their products, including all disciplines and methodologies of biology such as aerobiology, agricultural science, plant science, animal science, bioinformatics, genomics, proteomics, synthetic biology, environmental science, public health, modeling, engineering of living systems, and all applications of the biological sciences. The term is meant to encompass the diverse approaches for understanding life at the level of ecosystems, organisms, organs, tissues, cells, and molecules.”

Section 6.2.1 of the USG Dual Use of Research Concern Policy requires the institution to identify research that involves one or more of the 15 designated agents or toxins (see below).

1. Avian influenza virus
2. Bacillus anthracis
3. Botulinum neurotoxin
4. Burkholderia mallei
5. Burkholderia pseudomallei
6. Ebola virus
7. Foot-and-mouth disease virus
8. Francisella tularensis
9. Marburg virus
10. Reconstructed 1918 Influenza virus
11. Rinderpest virus
12. Toxin-producing strains of Clostridium botulinum
13. Variola major virus
14. Variola minor virus
15. Yersinia pestis

39. Does this project involve the use of any of the 15 agents or toxins listed above.

Yes [ ] No [ ]. **If yes, please list the agents or toxins your project will use. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

40. Research that uses one or more of the agents or toxins listed in Section 6.2.1, and produces, aims to produce, or can be reasonably anticipated to produce one or more of the effects listed in Section 6.2.2 will be evaluated for DURC potential by the IBC.

If you answered yes to Q39, please review the following list of categories and mark any category that applies to your proposed work. If you answered No to Q39, mark Not Applicable.

Categories of experiments:

[ ] a) Enhances the harmful consequences of the agent or toxin

[ ] b) Disrupts immunity or the effectiveness of an immunization against the agent or toxin without clinical and/or agricultural justification

[ ] c) Confers to the agent or toxin resistance to clinically and/or agriculturally useful

prophylactic or therapeutic interventions against that agent or toxin or facilitates

their ability to evade detection methodologies

[ ] d) Increases the stability, transmissibility, or the ability to disseminate the agent or toxin

[ ] e) Alters the host range or tropism of the agent or toxin

[ ] f) Enhances the susceptibility of a host population to the agent or toxin

[ ] g) Generates or reconstitutes an eradicated or extinct agent or toxin listed in Section 6.2.1

[ ] h) Not Applicable

**Section VII: Human Blood, Sera or Tissue**

41. Does this project involve human sera or tissue? Yes [ ] No [ ]. If yes, please complete sections 42-45.

42. Describe the human tissue or sera to be used:

43. Do these materials have an increased risk of containing pathogens? Yes [ ] No [ ]

(e.g. derived from persons known to be infected with a microorganism)

44. What is the increased risk due to?

45. Under which biosafety level will this work be conducted?

**Section VIII: Human Cell Lines**

46. Does this project involve human cell lines Yes [ ] No [ ]. If yes, please complete sections 47-50.

47. List all cell lines that will be used.

48. Please list any known infectious agents associated with these cell lines.

49. Under which biosafety level will this work be conducted?

50. Have you read our recommendation for handling human cell lines on the IBC Website? Yes [ ] No [ ]