

Plant Research and UNL Institutional Biosafety Committee (IBC)

From recent questions our office has received regarding what research at UNL requires an Institutional Biosafety Committee (IBC) protocol, the following clarifications are being provided.

- **All** recombinant plants grown in UNL greenhouses, growth chambers, or laboratories are subject to the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules (NIH Guidelines, https://osp.od.nih.gov/wp-content/uploads/NIH_Guidelines.pdf).
 - Plants that were created via recombinant tools and retain stable genetic modifications from gene editing tools are still considered recombinant, even when editing transgenes have been segregated away from the modified allele.
 - Typically, the use of recombinant plants in research falls under III-E and III-E-2 of the NIH Guidelines. Experiments with plants that include recombinant and synthetic nucleic acid techniques and exotic infectious agents fall under III-D-5.
 - There are no exemptions for the growth of recombinant plants in UNL greenhouses. Commercially available recombinant plants still fall under the NIH Guidelines and an approved IBC protocol is required for this work.
- Research with plant pathogens is subject to approval by the UNL IBC and requires an approved IBC protocol before work can begin.
- The UNL Biosafety Guidelines apply to clinical/diagnostic, research, and teaching activities involving any of the following items individually or in combination with each other (https://ehs.unl.edu/Biosafety_Guidelines.pdf):
 - Recombinant or Synthetic Nucleic Acid molecules
 - Human, animal, and plant pathogens
 - Toxins of biological origin
 - Human blood and other potentially infectious materials
 - Human and non-human primate cells and organ/tissue cultures
 - Select Agents and Toxins
 - Genetically-modified animals or plants
 - Field Collection or Sampling of Wild Animals

IBC protocols are submitted via the **Institutional Biosafety Committee** module of **NuRamp** (<https://nuramp.nebraska.edu/login>). Should you have questions while completing a form, *please reach out via ibc@unl.edu or call 402.472.4925* and request to speak to biosafety staff.

IBC New Protocol Form Summary:

- A new protocol can be started from the Protocol page of the IBC module, select 'Add New IBC Protocol.'
- Section I, is general information about the faculty member, personnel and protocol attributes.
 - Common attributes to check are #3 for pathogen work and #6 with #15 for recombinant plants. Checking #15 will require an NIH Guideline is selected.
- Section II, Research Description, should include enough detail to provide the IBC context for the materials listed in later sections.
- Section III, Microorganisms, is for pathogen entries, click the 'Not Applicable' box if your work does not include pathogens. If you perform transformations with *Agrobacterium spp.*, include an entry for the Agro. Additionally, if you propagate plasmids in *E. coli*, include an entry for *E. coli* and provide the strains in use.
- Section IV, Cell/Tissue Culture, click 'Not Applicable' if no applicable cells or samples are utilized in your research.
- Section V, Research Organism, create a separate entry for each species of recombinant plant that will be utilized. Include separate entries for wild-type plants if they will be treated with or receive recombinant and/or synthetic nucleic acids. Entries should include information about the genetic modification to the plant. If the plant is genetically modified, please answer 'Yes' to question 6 and indicate whether it will be generated at the UNL Plant Transformation Core or received from a collaborator. If the plant is treated with a pathogen or microbe, please answer 'Yes' to question 7.
- Section VI, Recombinant and/or Synthetic Nucleic Acid Information, add gene sequences and plasmid information if the manipulations are occurring in your laboratory. If you are receiving transgenic plants and not further genetically modifying them, this section can be checked 'Not Applicable.'
- Section VII, Toxin Information, only list toxins that are isolated and/or used in treatments. If working with a toxin producing organism, but the toxin is not isolated, no entry is needed and 'Not Applicable' should be selected.
- Section VIII, Facilities, list your laboratory space and indicate the greenhouse(s) usage.
- Section IX, Specialized Equipment Information, this section is frequently 'Not Applicable.' Equipment that generates aerosols or might pose a worker hazard should be included.

- Section X, Risk Assessment, not all items in this section apply to all work, please provide information relevant to your work. Specifically, the following:
 - Select containment level for each work location, laboratory, and greenhouse. For additional information, see the EHS SOP: Biosafety Containment Levels, https://ehs.unl.edu/sop/s-bio-containment_levels.pdf .
 - Disinfectants, see EHS SOP: Chemical Disinfectant for Biohazardous Materials <https://ehs.unl.edu/sop/s-bio-disinfectants.pdf> ,
 - Biological Decontamination and Disposal Methods, see EHS SOP: Disposing of Biohazardous Materials, Including Recombinant or Synthetic Nucleic Acids, <https://ehs.unl.edu/sop/s-bio-dispose.pdf> .
- Section XI, Relevant attachments can be included in this section.

For questions, please reach out to biosafety staff at ibc@unl.edu or by calling 402.472.4925.