

A Biosafety Needs Assessment

Genetically Modified & Gene Drive-Containing Insects

by

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0% Responsibilities

A SHORT SURVEY FOR BIOSAFETY PROFESSIONALS

Transgenic and genome editing technologies are increasingly being used in an ever-growing number of insect species of public health and agricultural significance. The Foundation for the National Institutes of Health is conducting a short survey of biosafety professionals as part of a larger needs-assessment in this important area of research and development that will its program development.

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Do your responsibilities include laboratory safety and/or biosafety compliance?

☐ Yes ☐ No

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Insect Inventory

Transgenic insect technologies are available to scientists that are applicable to a large and ever-increasing number of insect species.

Synthetic gene drives are one of the newer transgenic insect technologies that enable researchers to introduce transgenes into insect genomes so they rapidly spread through populations of those insects. The ability of synthetic gene drives to spread through populations of insects can be useful for reducing or modifying natural population of insects.

Risk assessment and containment challenges associated with synthetic gene drive-containing insects may be greater than those for other insect genetic modification technologies, since premature release of gene drive-containing insects could have unintended environmental consequences resulting from the persistence and spread of the transgene.

more information about gene drives can be found at the Wyss Institute [here](#)

List the insect species (common names are fine) maintained or housed at your institution, indicating for which species there are non-GM lines, GM lines and GM lines containing synthetic gene drives. If you are uncertain of the status, please indicate.

species 1

Check All That Apply

- ☐ Non GM
☐ GM
☐ Gene Drive
☐ Uncertain Status

species 2

Check All That Apply

- ☐ Non GM
☐ GM
☐ Gene Drive
☐ Uncertain Status

species 3

Check All That Apply

- ☐ Non GM
☐ GM
☐ Gene Drive
☐ Uncertain Status

species 4

Check All That Apply

- ☐ Non GM
☐ GM
☐ Gene Drive
☐ Uncertain Status

species 5

Check All That Apply

- ☐ Non GM
☐ GM
☐ Gene Drive
☐ Uncertain Status

species 6

Check All That Apply

- ☐ Non GM
☐ GM
☐ Gene Drive
☐ Uncertain Status

species 7

Check All That Apply

- ☐ Non GM
☐ GM
☐ Gene Drive
☐ Uncertain Status

species 8

Check All That Apply

- ☐ Non GM
☐ GM
☐ Gene Drive
☐ Uncertain Status

Additional Comments or Information related to species of Insects at your Institution.

Which, if any, risk group agents* are associated with insects housed at your institution (non-GM or GM)? Check all that apply.
*refers to the classification of infectious microorganisms as described in [Biosafety in Microbiological and Biomedical Laboratories](#).

- ☐ No known insect-associated risk group agents present
- ☐ Group 1: Agents not associated with disease in healthy adult humans.
- ☐ Group 2: Agents associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available
- ☐ Group 3: Agents associated with serious or lethal human disease for which preventive or therapeutic interventions may be available.
- ☐ Group 4: Agents likely to cause serious or lethal human disease for which preventive or therapeutic interventions are not usually available.

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40% Guidance Sources

Non-Genetically Modified Please indicate which of the following are typically used to assess risks and containment requirements of Insects used in research at your Institution. Check all that apply *

- ☐ Advice and Recommendation of the Principal Investigator
- ☐ NIH Guidelines on Recombinant DNA
- ☐ Biosafety in Microbiological and Biomedical Laboratories (BMBL)
- ☐ Arthropod Containment Guidelines (American Committee of Medical Entomology)
- ☐ Containment Guidelines for Nonindigenous, Phytophagous Arthropods and Their Parasitoids and Predators (USDA/APHIS/PPQ)
- ☐ Containment Guidelines for the Receipt, Rearing and Display of Nonindigenous Arthropods in Zoos, Museums, and Other Public Displays (USDA/APHIS/PPQ)
- ☐ Specifications and conditions associated with a Permit
- ☐ National/Regional/State/Local requirements or guidelines. Please specific/comment below

Additional comments related to sources of guidance for assessing risk and containment requirements **Non-Genetically Modified** Insects

Genetically Modified Please indicate which of the following are typically used to assess risks and containment requirements of Insects used in research at your Institution. Check all that apply *

- ☐ Advice and Recommendation of the Principal Investigator
- ☐ NIH Guidelines on Recombinant DNA
- ☐ Biosafety in Microbiological and Biomedical Laboratories (BMBL)
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- ☐ Specifications and conditions associated with a Permit
- ☐ National/Regional/State/Local requirements or guidelines. Please specific/comment below

Additional comments related to sources of guidance for assessing risk and containment requirements **Genetically Modified** Insects

How would you rate currently available **guidance documents** you consult when assessing risks and containment requirements in each of the situations below?

	Adequate	Inadequate	Not Applicable
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	Adequate	Inadequate	Not Applicable
for Non-GM Insects	<div><div></div><div>1</div></div>	<div><div></div><div>2</div></div>	<div><div></div><div>3</div></div>
for GM Insects	<div><div></div><div>1</div></div>	<div><div></div><div>2</div></div>	<div><div></div><div>3</div></div>
for Synthetic Gene Drive Insects	<div><div></div><div>1</div></div>	<div><div></div><div>2</div></div>	<div><div></div><div>3</div></div>

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60%

Confidence Assessment

How would you **rate your level of confidence** in assessing risks and containment requirements for laboratories working with GM Insects compared to other GM organisms (e.g. microbes, animals, plants)?

	Much less confident	Somewhat less confident	About the same level of confidence	Somewhat more confident	Much more confident	Choose not to respond
I am	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6

Based on your experiences with your Institution's biosafety committee (IBC), how would you **rate the IBC's collective experience** in assessing risks and containment requirements for laboratories working with GM Insects compared to other GM organisms (e.g. microbes, animals, plants)?

	Low	Medium	High	We do not have an IBC
IBC's experience with GM Insects is	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4

Based on your experiences with your Institution's biosafety committee (IBC), how would you **rate the IBC's level of confidence** in assessing risks and containment requirements for laboratories working with GM Insects compared to other GM organisms (e.g. microbes, animals, plants)?

	Much less confident	Somewhat less confident	About the same level of confidence	Somewhat more confident	Much more confident	We do not have an IBC
IBC's confidence level in dealing with GM Insects compared to other GM organisms	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6

If your Institution is currently working with or may in the future work with **synthetic gene drive-containing Insects**, how would you **rate your level of confidence** in assessing the risks and containment requirements associated with these genetically modified Insects?

	Very Low	Low	Neutral	High	Very High	Not Applicable
My confidence level is	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6

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Third-Party Compliance Accreditation **80%**

Third-party conformity/compliance assessment bodies are neutral entities that provide authoritative consultative and advisory services on specific compliance issues, providing the client with assurance that they are meeting or exceeding the standards they intended to apply and often provide accreditation or certification.

Unbiased assurances of compliance give institutions confidence that research is being conducted safely, indicates that the institution has the highest regard for the safety of its personnel and the environment and that it strives to comply with all relevant regulations and guidelines.

more information about voluntary third party compliance assessments can be found [here](#)

Have you or your biosafety office used third-party conformity/assessment entities for any of your official responsibilities?

- ☒ Yes
☐ No
☐ Not Sure

Which third-party conformity/compliance assessment entities have you used, for what purpose and how would you rate your experiences with these entities?

How likely is it that you would use a voluntary neutral third-party consulting or accrediting entity as described above to assist you with assessing risks, containment requirements and management practices of laboratories housing genetically modified or synthetic gene drive-containing insects, assuming that such an entity existed and cost was not an issue?

	Choose not to answer	Certainly would not use	Unlikely to use	Might use	Certainly would use
Likelihood of using	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input checked="" type="radio"/> 5

Please provide any additional comments regarding your experiences dealing with GM insects or your reactions to the idea of a voluntary third-party compliance assessment entity that could serve institutional biosafety officers and institutional biosafety committees and provide them with assurances, accreditation or certification of compliance.

Thank You for Completing the Survey!

Please select "Submit" below.

Thank you for taking this survey!

Your professional opinions are highly valued

Please forward the link to this survey to your biosafety colleagues.

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For questions or more information about this survey please contact

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