



## ***Barcode Long Island Guidelines***

### **Rules of Participation:**

These are the guidelines for participating in *Barcode Long Island (BLI)*. All participants are required to read and comply with these rules. Any team whose participants violate these rules will lose support and be asked to leave the project. The DNA Learning Center reserves the right to interpret and amend these rules at any time, for any reason; all decisions by the project staff are final.

### **Eligibility:**

1. All entries must be made by a **student team** with a **BLI mentor**.
2. Each student team can include 2-4 members enrolled in grades 9-12 at public or private high schools in Long Island, NY as defined by the four counties it includes: Queens, Kings, Nassau, and Suffolk.
3. Students on a team do not need to be from the same school.
4. Each student can only be a member of one team.
5. *BLI* mentors must be science educators who are qualified to teach students at a public or private high school or college in Long Island, Brooklyn, or Queens to sponsor a team.
6. Mentors must have completed one DNA barcoding workshop led by *BLI* staff.
7. *BLI* mentors agree to ensure students they sponsor are properly supervised for all competition-related activities. Mentors are also responsible for enforcing all safety regulations required by *BLI* and all rules and regulations required by the students' local schools and school boards.
8. *BLI* mentors will usually sponsor students from their own schools. At their discretion, they may sponsor teams composed of students from their own and/or other schools.

### **Entry Requirements: Project Proposal**

Students must submit a proposal (max. 5 pages) for an investigation that satisfies the following requirements:

1. Investigations must make use of DNA barcoding to study the biodiversity of Long Island and/or its surrounding waters.
2. Investigations may not involve the collection of samples that are of known risk to human health, including blood, other bodily fluids, or clinical samples.
3. Reagents and materials for DNA isolation and sequencing for a **maximum of twenty samples, sequenced in both the forward and reverse directions**, will be provided to each team. Any laboratory materials used outside of those provided by must be detailed in the proposal.



# Cold Spring Harbor Laboratory

## DNA LEARNING CENTER

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4. All projects must specify in detail what samples they propose to collect, including: type of samples, estimated number of samples, how these samples will be collected, where these samples will be collected, and what efforts, if any, are needed to minimize damage to specimens or the environment during the collection process.
5. No team may employ methods to collect samples which put team members or other people at risk of harm.
6. The project may not involve harming or destroying vertebrates.
7. The project must minimize any damage to animals or plants, whether found on public or private property. If in doubt of the status, collection should not proceed until expert help determines the status of the organism(s). In most cases, plant samples should not exceed a single leaf or needle. For invertebrates, the number of individuals that are sampled should be minimized. Collection of whole plants is prohibited.

No threatened or endangered organisms may be collected. The following NY state species should never be collected because they are state protected:

[http://ecos.fws.gov/tess\\_public/pub/stateListingAndOccurrenceIndividual.jsp?state=NY](http://ecos.fws.gov/tess_public/pub/stateListingAndOccurrenceIndividual.jsp?state=NY).

8. Samples may not be collected from any public or private location without authorization.
9. Teams must document authorization to collect and specify in detail the collection location, the reason they need entry, what safety hazards (if any) are present, and what safety precautions (if any) will be taken. This documentation must be signed and verified by the *BLI* mentor, the principal of the students' school(s), the students, and the parents of all minors on the team.
10. No team may violate any laws or statutes as part of their participation in *Barcode Long Island*.
11. Participants agree to assume any and all responsibility for all their actions connected with participation in *Barcode Long Island*. Participants agree to assume full liability for any damages, injuries, or liabilities connected with their participation in *Barcode Long Island*.



## Research Proposal Requirements

*Barcode Long Island* proposals will be reviewed for scientific merit and originality. The proposal is your time to show skillful planning of an interesting project. Projects must study Long Island biodiversity using DNA Barcoding as an essential part of the research. Projects where DNA barcoding is used to answer questions that could not be answered in other ways will be given preference. Reagents, materials, and sequencing for a maximum of twenty samples sequenced in both directions will be provided to each team.

### **Format of the Proposal**

1. The proposal should be a maximum of five pages (excluding references) that incorporate the following components:
  - **Introduction**, surveying current literature, background and purpose of the project (maximum one page).
  - **Specific Aims**, providing the goals and approach of the experiment (maximum one page).
  - **Methods**, detailing how samples will be collected, archived, and processed to produce barcodes. If the project requires taxonomic identification independent of DNA Barcoding, a clear plan must be included. Contact us if you need help finding a taxonomist. Any anticipated permission needed to collect samples must also be documented (maximum two pages).
  - **Data Interpretation Plan**, detailing methods for data analysis, including any planned graphical or statistical approaches (maximum one page).
  - **References**, outlines all sources used with internal citations. The reference section is not included in the five pages. Participants are encouraged to seek all forms of resources, journals, text books, and mentors in the field (no page limit set).
2. Proposal Margin and Spacing Requirements
  - Use one of the following typefaces:
    - Arial, 11 point
    - Times New Roman, 11 point
  - Margins, in all directions, must be 1 inch
  - Single spaced
3. Work submitted by student teams is expected to be of their own original design and execution, and presented in their own words. Full disclosure of any other person or resource that may have influenced the applicants' proposal is required. The research project should reflect the work of the students. Students may receive review of their work and writing, but all alterations are to be that of the students.

### **Team Information**

The name, address, present grade (9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> or 12<sup>th</sup> grade), school/institution, state/Zip, demographics and brief biography of each student and their sponsoring teacher must be submitted with each proposal.



**Proposal Rubric**

The proposals will be reviewed using the following rubric. Each section will be scored out of a maximum number of points, indicated in the points earned column. Reviewers will use the guidelines in the following table when determining how many points to award for each section. Proposals will be ranked based on average points from all reviewers. Proposals that are incomplete or do not conform to the proposal guidelines may be excluded at the discretion of the reviewers and project staff.

| Proposal Rubric                 |   |  |   |               |
|---------------------------------|---|--|---|---------------|
| Attributes                      | Above Standard  | At Standard  | Below Standard  | Points Earned |
|                                 | (10-9)  | (8.5-7)  | (7-0)   |               |
| <b>Introduction</b>             | Identified an interesting and testable question that relies on DNA barcoding to study the biodiversity of Long Island.  | Identified an interesting, relevant, and testable question that can be answered with DNA barcoding, but does not need barcoding.   | The purpose is incomplete, too easy to attain, does not address biodiversity of Long Island, or does not rely on DNA barcoding.   | <b>/10</b>    |
|                                 | (5-4.5)   | (4-3.5)  | (3-0)   |               |
| <b>Hypothesis</b>               | Utilized literature search to develop a hypothesis which was reasonable and well substantiated.   | Utilized literature search to develop a hypothesis which was reasonable.   | Hypothesis is not complete or does not flow logically from research.  | <b>/5</b>     |
|                                 | (10-9)  | (8.5-7)  | (7-0)   |               |
| <b>Methods</b>                  | A well thought out, sequential (step-by-step) procedure is stated that ANYONE could look at and follow. It holds high promise for collecting the information sought. Measurements to be made are systematic and logically controlled (changing one variable at a time) and are repeated to improve reliability of data. | A complete, sequential (step-by-step) procedure is stated but is difficult to follow. It holds promise for collecting the information sought. The measurements to be made are systematic and logically controlled (changing one variable at a time). | The procedure is incomplete, not sequential, or takes effort on the part of the reader to follow. It may not be systematic or logically controlled (perhaps your group has defined many variables to vary at once and have not clearly decided how to measure all variables.) | <b>/10</b>    |
|                                 | (5-4.5)   | (4-3.5)  | (3-0)   |               |
| <b>Data Interpretation Plan</b> | Plans for displaying the collected data are clearly laid out (a table is STRONGLY recommended). Thoughts for ambitious analysis of data (graphical analysis, etc.) are clearly communicated.  | Plans for displaying the collected data are clearly laid out (a table is STRONGLY recommended). Thoughts for thorough analysis of data (graphical analysis, etc.) are clearly communicated.  | The plan is incomplete or does not logically match with the data your group has decided to collect.   | <b>/5</b>     |
|                                 | (5-4.5)   | (4-3.5)  | (3-0)   |               |
| <b>Reference Section</b>        | A complete and properly formatted reference list is included. References to the literature are always marked in the body of the proposal.   | A partial or slightly and improperly formatted reference list is included. References to the literature are usually marked in the body of the proposal.  | The reference list is incomplete, difficult to use due to errors, or not marked correctly in the body of the proposal.  |               |