

Intel ISEF OFFICIAL ABSTRACT and CERTIFICATION



Mutulated Lambda Phage Prone to Lysogenic Properties
 George Lucas
 School of Science and Technology, Cedar Park, Texas USA

The AIDS and HIV pandemic has claimed the lives of millions of people in the past years. A latent virus in the lysogenic state is not harmful. If it is possible to keep a virus in the lysogenic state, then the virus's DNA or RNA will not harm the organisms. The purpose of this research project is to determine what site in the Lambda DNA causes the virus to be lysogenic.

The Lambda phage will be assigned control as the unmutated virus and the variable phage that is prone to lysogenic properties. After the virus's DNA is incorporated with the host cell, every time the host cell divides, it replaces the viral DNA that was incorporated along with its own DNA. The result is two daughter cells that each contain a copy of the prophage and the virus has replicated without harming the host cell. After the restriction enzymes are inserted into the Lambda phage's DNA, they will cut the viral DNA at very specific DNA sequences. The process of electrophoresis will be done to determine where the mutations of the mutated viral DNA, which in turn shows where the genetic switch is located in the viral DNA is to keep a virus in the lysogenic state.

By mutating viral DNA or RNA so that it is prone to lysogenic properties the virus becomes a vector for the transmission of the lysogenic genetic material permanently keeping the viral DNA in the lysogenic state without harming the organism.

Category
 Pick one only--
 mark an "X" in
 box at right

- Animal Sciences
- Behavioral and Social Science
- Biochemistry
- Cellular & Molecular Biology
- Chemistry
- Computer Science
- Earth Science
- Eng. Electrical & Mechanical
- Eng. Materials & Bioengineering
- Energy & Transportation
- Environmental Management
- Environmental Sciences
- Mathematical Sciences
- Medicine and Health
- Microbiology
- Physics and Astronomy
- Plant Sciences

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply): human subjects vertebrate animals microorganisms rDNA tissue
 Potentially hazardous biological agents:
2. Student independently performed all procedures as outlined in this abstract. Yes No
3. Student worked or used equipment in a site other than school, field or home. Yes No
4. This project is a continuation of previous research. Yes No
5. My display board includes non-published photographs/visual depictions of humans (other than myself): Yes No

I/We hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I/We also attest that the above properly reflects my/our own work.

 Finalist or Team Leader Signature

 Date



This embossed seal attests that this project is in compliance with all federal and state laws and regulations and that all appropriate reviews and approvals have been obtained including the final clearance by the Intel ISEF Scientific Review Committee.

ABSTRACT & CERTIFICATION INSTRUCTIONS

This abstract form and the instructions below are intended for Intel ISEF finalists. Entrants of regional and state fairs may also be directed to use this form. Please follow all local, regional or state instructions. As an Intel ISEF finalist, you will receive further information and will be required to complete this abstract in an on-line abstract system immediately after winning at your regional or state fair.

WRITING REQUIREMENTS

Abstracts should be **single-spaced using 12-point type** from a black ribbon or laser cartridge. Abstracts may not exceed 250 words and must be typed within the predefined area (5.5 tall by 6 wide). Type title (Title Case required); your first name, middle initial and last name; and your school's name, city and state within the first .75 inches of space within the box. Two lines may be used for the title. *Teams must include all team member names.*

Example: Effects of Marine Engine Exhaust Water on Algae
Mary E. Jones
Hometown High School, Hometown, Pennsylvania

BE SURE TO ANSWER THE 4 QUESTIONS BY MARKING THE APPROPRIATE BOXES AND CERTIFY BY SIGNING

TIPS ON WRITING

The three most common reasons that a student is asked to rewrite the abstract are 1) including acknowledgements (this includes naming the research institution and/or mentor with which you were working) 2) describing research not completed by the student finalist and 3) describing research done in previous years. Please limit yourself to describing research **you** have done in the current year.

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Because your Abstract & Certification will not be considered an official one until it is stamped/embossed at the Intel ISEF, you must NOT mount a copy of any abstract on your vertical display board before arriving at the Intel ISEF. If you plan to have an Abstract & Certification on your vertical display board (recommended), you should leave a space (8.5 by 11 inches) for it to be mounted after you have arrived at the ISEF and your Official Abstract & Certification has been returned with the embossed approval.

If you do not plan to mount a copy of your official Abstract & Certification on your vertical display board, you should bring with you a means by which to display the official Abstract & Certification in a vertical position somewhere at your project. The only abstract allowed anywhere at the Intel ISEF is the official Abstract & Certification. **The term "abstract" may NOT be used** as a title or reference for any information **on your vertical display board** or in readily visible materials at the project **except as a part of displaying the Official Abstract & Certification.**

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** This form may not be relevant for your regional or state fair; please refer to instructions from your affiliated fair.**

In ADDITION to the basic form requirements for ALL Projects and any other requirements due to specific areas of research, an Abstract & Certification is required at the conclusion of research. Details on this requirement follow.

Completing the Abstract

After finishing research and experimentation, you are required to write a (maximum) 250 word, one-page abstract. This should be written on the Official Abstract and Certification Form as provided by Science Service. The abstract **should include the following:**

- a) *purpose of the experiment*
- b) *procedure*
- c) *data*
- d) *conclusions*

It may also include any possible research applications. Only minimal reference to previous work may be included. An abstract **must not include the following:**

- a) *acknowledgments (including naming the research institution and/or mentor with which you were working), or self-promotions and external endorsements*
- b) *work or procedures done by the mentor*

Completing the Certification

At the bottom of the Abstract & Certification form there are five questions. Please read each carefully, answer appropriately, and sign in the signature box to certify your answers. The Intel ISEF Scientific Research Committee will review and approve the abstract and answers to the questions.

Revisions or questions will be resolved via an SRC appointment on site at the Intel ISEF. Please bring a copy of your Abstract & Certification to the fair. Only after final Intel ISEF SRC approval has been obtained via a stamped/embossed copy of this Abstract & Certification may a Finalist make copies to hand out to the judges and the public.

Intel ISEF Sample Abstract & Certification

<p>Title _____</p> <p>Finalist's Name _____</p> <p>School Name, City and State, Country _____</p> <hr/> <p style="text-align: center;">Start Typing the Body of Your Abstract Here Beginning at the Left Margin</p>	<p>Category</p> <p>Pick one only-- mark an "X" in box at right</p> <ul style="list-style-type: none"> Animal Sciences <input type="checkbox"/> Behavioral and Social Science <input type="checkbox"/> Biochemistry <input type="checkbox"/> Cellular & Molecular Biology <input type="checkbox"/> Chemistry <input type="checkbox"/> Computer Science <input type="checkbox"/> Earth Science <input type="checkbox"/> Eng. Materials & Bioengineering <input type="checkbox"/> Eng.: Electrical & Mechanical <input type="checkbox"/> Energy & Transportation <input type="checkbox"/> Environmental Sciences <input type="checkbox"/> Environmental Management <input type="checkbox"/> Mathematical Sciences <input type="checkbox"/> Medicine and Health <input type="checkbox"/> Microbiology <input type="checkbox"/> Physics & Astronomy <input type="checkbox"/> Plant Sciences <input type="checkbox"/>
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Sample Intel ISEF Official Abstract & Certification

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