

Summer Student Application Instructions

A. Are You Eligible:

There are specific eligibility requirements for applicants to this program. At the time of participation in the program, a high school student must (1) have completed Grade 11 or Grade 12; and (2) be at least 16 years old. At the time of participation in the program, a college student must (1) be enrolled as a full-time undergraduate student, (2) have at least one semester of undergraduate school remaining before graduation. All applicants must be either a U.S. citizen or permanent resident. Make sure that you are eligible before completing the application. If you have questions about eligibility, contact us at the locations listed in section D below.

B. Required Documents:

A complete application consists of the documents listed on the Checklist, Section E of this form.

C. Submission:

Assemble your application documents in the order listed on the Checklist (page 2).

Note: We prefer to receive your complete application in one envelope. However, if this is not possible, please send in what you can, and we will add recommendation letters and transcripts to your file as necessary.

Mail the application envelope to:

Education Office
The Jackson Laboratory
600 Main Street
Bar Harbor, ME 04609-1500

Your application must be postmarked by the first Monday in January. We will not review late applications.

We will not review applications that are sent by fax.

D. If you have questions:

Email: summerstudents@jax.org
Telephone: 207-288-6250 or -6849

E. Checklist

Please assemble your application in the following order:

- Acknowledgement postcard (you will need to buy a postcard to include with your application)
- Please prepare a postcard, addressed to yourself, with the following message: "This acknowledges that we have received your application to the Summer Student Program." Once we receive your application we will sign and date it, and mail your postcard back to you to confirm receipt.
- Please make sure you put a stamp on your self-addressed postcard.
- Attach the postcard to checklist.
- Sign and place the "checklist" on top of the application form.
- Application form (please make sure all information is complete)
- Essay
- Two recommendation forms with attached narrative evaluation from faculty familiar with your science record. *Note: Please make sure the recommendations are in a sealed envelope, with the faculty member's signature across the seal. If possible, please include the recommendation letters in your application packet.*
- Transcripts (if you are in your first year of college please include your high school transcript)
- Student driver application (optional for college students who will be 21 before the start of the program)
- I certify that this application is complete.

Date:

Printed name of applicant:

Signature of applicant:



Education Office
 600 Main Street
 Bar Harbor, ME 04609-1500
 207.288.6250
<http://education.jax.org/summerstudent/index.html>
summerstudents@jax.org

Application for Admission to Summer Student Program

Information on application requirements and on how to submit your application appears on the pages entitled *Summer Student Application Instructions*

Date: _____

Name: _____

I hereby apply for admission as (check one): Summer Student (Precollege)
 Summer Student (College)

Eligibility: If the answer to any of the following four statements is “No”, you are not eligible for the Summer Student Program.

Precollege applicants:

* I am currently in Grade 11 or 12, and will be at least 16 years old by the start of the program:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
* I am a U.S. citizen or permanent resident of the U.S.:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

College applicants:

* I am currently enrolled as a full-time undergraduate student, and at the time of participation in this program I will have at least one semester of undergraduate school remaining before receiving the baccalaureate degree:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
* I am a U.S. citizen or a permanent resident of the U.S.:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Personal Information:

Home address (parent’s permanent address):

School address (your address while at school):

Address to which we should send the notice of decision on your application (check one):	<input type="checkbox"/> Home	<input type="checkbox"/> School
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Name of school: _____

Major: _____

Parent's home phone number: _____

Your phone number while at school: _____

Your cell phone number: _____

Your email address: _____

Sex: Male Female

Date of Birth: _____

Citizenship: _____

Name of parent(s) or guardian(s):

Are you a member of an underrepresented group?

- Black Hispanic Native American
- Pacific Island Native Alaskan Native Other (specify) _____

Are you a first generation college student or college bound? Yes No

Family annual income qualifies for federal disadvantage assistance/loan? Yes No

Educational record (begin with secondary school and list the institution name, dates attended, diploma or degree, and year received / expected):

Institution Name	Dates Attended	Diploma / Degree earned	Year Received / Expected

What grade, or year of academic standing, will you have completed by June of 2010? _____

Advanced degrees you expect to pursue: Ph.D. M.D. D.V.M. Undecided

Research Interests:

General descriptions of our research programs are presented in the “Overview of Research” pages. In the spaces below, list four of the research program areas in the order of your preference from the following list: bioinformatics/computational biology; cancer; developmental biology and aging; genomics; hematology/immunology; metabolic diseases; neurobiology and sensory deficits; and research-related resources).

First Preference _____

Second Preference _____

Third Preference _____

Fourth Preference _____

Most, but not all, research projects at The Jackson Laboratory involve the use of laboratory animals, usually mice. Please indicate your preference about working with laboratory animals by checking one of the four spaces below.

- No Preference
- Will not work on project involving lab animals
- Prefer project involving lab animals
- Prefer project not involving lab animals

Note: The Jackson Laboratory complies with government regulations and guidelines for the care and use of vertebrate animals in research and training. All student projects involving animals are approved by the Laboratory’s Animal Care and Use Committee, and students who work with animals will attend training sessions before handling animals. Many, but not all, such projects involve invasive techniques and euthanasia.

Essay:

Provide concise answers to the following (the entire essay should be 3-pages maximum, double-spaced):

Describe your qualifications for participation in the program. Include examples of any specific experiences in science. List previous summer programs and courses that included hands-on laboratory experience (lab experience is not a requirement for admission).

Why do you want to attend this program?

- a) Explain why you chose the Research Interests you listed above, including any strong preferences you have for or against working in any specific area.
- b) Explain why you prefer (or do not prefer) to work with laboratory animals. (This information will be used as a guide for assigning students to projects. We will make every effort, but cannot guarantee, to assign students to projects that meet their stated preferences).

Describe your education and career goals and your reasons for pursuing them.

What do you do in your spare time?

Where did you hear about our Summer Student Program?

Early Start (college students only):

College students are encouraged to begin the summer program early to increase the time spent on their research projects. Please indicate below on which date you plan to start if you are selected and choose to attend the program (see arrival dates on the website).

- Early Start Regular Start

Student Drivers (college students only):

Several college students, age 21 or older, will be chosen as Student Drivers, each of whom will receive a \$500 stipend. For further information, and to apply for one of the positions, see the accompanying form, Student Driver Application.

Certification / Consent (all applicants):

- This certifies that the information I have entered on this form is complete and accurate.
- If I agree to attend the Summer Student Program, I will attend the program in its entirety, from the Early Start date or Regular Start date to Symposium/Graduation Day. Students should plan on departing Highseas on the day following graduation.

Signature of student:

- (Minors only)** This certifies that I approve of this application and that the applicant has my consent to participate if selected. I also agree to fully disclose any health problems of the applicant on a Jackson Laboratory medical form if the applicant is selected.

Signature of Parent(s) or Guardian(s):

Overview of Research

The Jackson Laboratory (JAX) is an independent, not-for-profit research institution dedicated to the betterment of human health through genetic research. The research carried out on campus is supported by federal grants and/or private funding awarded to each Principal Investigator (PI). The Laboratory offers its investigators the privilege of conducting basic research and pursuing interesting findings as they arise, often leading to breakthrough discoveries in unexpected directions.

The Jackson Laboratory is home to over 35 PIs conducting research within the scope of mammalian genetics. Eight major areas can be described as the research focus of JAX: cancer; bioinformatics and computational biology; developmental biology; immunology and hematology; metabolic diseases; neurobiology and sensory deficits; genomics; and resource-related research. Many of the PIs' conduct research in more than one category, and virtually all work done at JAX has a basic connection to unraveling the genetic causes of disease.

Cancer:

The Jackson Laboratory was founded in 1929 as one of the first cancer research institutes in the United States. Although the Laboratory has expanded to encompass a variety of interests over the years, characterizing the genetic aspects of cancers and tumor growth remains a research focus today. In fact, JAX is a designated National Cancer Institute Basic Cancer Research Center.

Cancer studies at JAX range from investigating basic immunological pathways and their connection with the disease, to specific mouse models of cancer, including mammary and ovarian cancers, as well as leukemia and AIDS research. Research projects to elucidate the genetic basis of tumorigenesis (tumor development and growth) and metastasis (the spreading of the disease to other parts of the body) are also underway.

Bioinformatics and Computational Biology:

The Jackson Laboratory has expanded its research base over the last ten years, with Bioinformatics and Computational Biology an integral part of that growth. Bioinformatics is the application of computers and databases to the storage and retrieval of biological information, whereas computational biology refers to the development of software applications that address specific biological questions. Our bioinformatics department consists of more than 80 professionals, including PIs, software engineers, database editors, user support, and administrative support staff.

Contributions from JAX to the field of Bioinformatics include two award winning databases: The Encyclopedia of the Mouse Genome, which was a finalist for the 1992 Computerworld Smithsonian Institution award for innovation in information technology; and the Mouse Genome Database (MGD), which was nominated for the 1995 Computerworld Smithsonian award. In addition, one of the first gene expression databases, the Gene Expression Database for Mouse Development (GXD), allows researchers to obtain information about gene expression patterns. We invite you to see these databases in action on The Jackson Laboratory's Informatics Home Page: <http://www.informatics.jax.org>.

Developmental Biology and Aging:

Unraveling the blueprint for mammalian development from conception to death is the focus of several research groups at The Jackson Laboratory. This work falls into three broad categories: fertilization, embryology, and aging. Investigations range from developing culture conditions associated with measuring egg development and in vitro fertilization, to piecing together gene pathways in embryogenesis, to the study of senescence (aging) and the onset of disease associated with old age.

Genomics:

Virtually all the research done at The Jackson Laboratory contains a prominent genetics component. In addition to the study of disease models, there are more academic ventures being pursued in the study of genomics. These range from developing new techniques in molecular biology to Human Genome-related projects to gene mapping and elucidating chromosome structure.

Hematology/Immunology:

The immune system is one of the more dynamic and complex systems in mammals. Genetic pathways and environmental stimuli interact, triggering and maintaining a defense system to guard the health of an entire organism. In conjunction with the immune system, hematopoiesis, or the development of blood cells, is an essential component to maintaining health. The genetic basis for both immune function and hematopoiesis can be studied using defined mouse models for disease.

Dr. George Snell, an immunologist, was instrumental in understanding the genetic bases responsible for organ transplantation. He was awarded the Nobel Prize in 1980 for his groundbreaking work done at The Jackson Laboratory, and is known as the "father of immunogenetics." His work paved the way for others using mouse models to study disease and possible immunological treatments.

Metabolic Diseases:

Researchers at The Jackson Laboratory are investigating different aspects of metabolic disease. Several million people worldwide are affected by obesity, diabetes, atherosclerosis, gallstone formation, hypertension, and glaucoma. Although these diseases are treatable, they still take a toll on society and individuals in terms of health care, emotional, and physical costs. Deciphering the genetic basis for these diseases is the focus for several members of the JAX faculty. Getting at the root of the problem, so to speak, may lead to a cure for these conditions.

Many mouse models exist for a number of these diseases that are similar to the disease states seen in humans. Using breeding schemes, transgenic (introducing a gene or part of a gene into an animal) and knock-out technology (effectively inactivating a gene through genetic manipulation), these models are providing a wealth of information to scientists in the laboratory.

Neurobiology and Sensory Deficits:

It is estimated that thousands of genes are specifically expressed in the mammalian nervous system. Their interactions and pathways are phenomenally complex, ranging from brain development to daily central nervous system function to contributing to psychological states and behavior. Research at The Jackson Laboratory involves discovering gene mutations that can cause debilitating central nervous system diseases. The genetic basis for epilepsy and many other sensory disorders, and elucidating the function of specific cell types in the brain, are foci for JAX investigators.

Research Leads to Resources:

Many resources have emerged from continuing research by JAX investigators, mainly in the realm of genetic resources: gene mapping; animal husbandry and genetic quality control; specialized

molecular techniques; cryopreservation; and, of course, providing genetically defined mice. One necessary, and unexpected, corollary of being a mouse "mecca" is an allergy research program investigating new methods of controlling allergy symptoms specific to mouse antigen. In addition to the animal resources and databases available at JAX, the international journal *Mammalian Genome* was born at JAX, and currently publishes articles devoted to molecular biology and genomics. These invaluable resources would not be available to the worldwide research community if it were not for the continuing pursuit of knowledge in genetics and genomics here at The Jackson Laboratory.

In addition to providing the worldwide scientific community with resources, whether they are mice, DNA, or information, continuing research is an essential component for maintaining our resource standard of excellence. Improvements to resources at JAX range from setting standards for techniques like cryopreservation and microinjection, to characterizing new mouse mutants, to developing new and better ways to ensure the health of animal colonies and the humans who care for them.

Faculty Recommendation

Student Name (please print):	School Name:
Name of Evaluator:	Evaluator's Title:
Institution:	Address:
Telephone Number:	Email Address:
How long have you known the applicant?	In what capacity?

1. Please attach a one page narrative evaluation of the applicant, addressing each of the following points. Please write the applicant's name at the top of the page.

- a. Indicate the applicant's strongest positive characteristic and give a brief example illustrating this characteristic.
- b. Indicate the applicant's weakest point and explain its importance to the applicant's effectiveness.
- c. Please comment on the applicant's demeanor in a group environment, e.g. on attitude toward associates, social bearing, cooperativeness, tidiness, and respect for property.
- d. Additional comments, if any.
- e. Please print and sign your name at the end of the narrative.

2. Please rate the applicant's position in his/her peer group by checking the appropriate boxes below.

	Unable to Evaluate	Below Average (35%)	Average (25%)	Above Average (35%)	Superior (5%)
Knowledge of biological science					
Intellectual ability					
Originality of ideas					
Laboratory skills					
Verbal skills					
Writing facility					
Persistence under pressure / stress / difficulty					
Acceptance of responsibility					
Ability to work independently					

3. Return this page and the narrative evaluation to the student in a sealed envelope with your signature across the back of the envelope over the seal.

Applicants are required to submit all pieces of their application in one envelope.



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Faculty Recommendation

Student Name (please print):	School Name:
Name of Evaluator:	Evaluator's Title:
Institution:	Address:
Telephone Number:	Email Address:
How long have you known the applicant?	In what capacity?

1. Please attach a one page narrative evaluation of the applicant, addressing each of the following points. Please write the applicant's name at the top of the page.

- a. Indicate the applicant's strongest positive characteristic and give a brief example illustrating this characteristic.
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Summer Student Driver Application

Complete the following if you are at least 21 years old (or will be 21 before the start of the program), and want to be considered for selection as a Student Driver in the Summer Student Program.

Applicant's Name (please print):

Local transportation of summer students in a Jackson Laboratory passenger van is integral to the program's success. Several summer students, who are 21 years old or older, will be chosen as Student Drivers. The drivers share responsibility for driving the vehicle according to a schedule to be determined upon arrival. Drivers are accountable for the timely discharge of their duties, for the safe operation of the vehicle while it is assigned to them, and for the safety of their passengers.

The transportation schedule includes about three round trips daily (morning-late afternoon, early evening, and late evening) from the student residence to the Laboratory (2 miles per trip), and to Bar Harbor village (6 miles per trip). Occasionally the schedule might be expanded on weekends to include recreational trips. Drivers will be asked to make additional trips from time to time. Over the course of the summer, each driver will devote an estimated 60 to 75 hours to this responsibility. These duties should rarely, if ever, conflict with the driver's research schedule. Each Student Driver will be paid a stipend of \$500 at the conclusion of the program.

Your motor vehicle operator's license number:	
Expiration Date (please be sure your license will not expire during the summer):	
State of Issue:	
How long have you had your driver's license?	
* Has your driver's license ever been suspended or revoked?	
* Have you ever had a moving vehicle violation or accident?	
* Have you ever been convicted for violations of drug or alcohol laws?	
Driving restrictions (corrective lenses, daytime driving only, etc.)	

* If you answered "yes" to any of these questions, please explain on a separate page.

Type of vehicle you are licensed and competent to operate:

- Automatic transmission only
- Standard transmission only
- Automatic and standard
- Six to eight-passenger van

I certify that the above information is complete and accurate to the best of my knowledge.

Signature of applicant

Date