Life Sciences Summer Institute

High School Student Research Program

June 21, 2010-August 13, 2010

Program Description:

The High School Student Research Program, a part of the Life Sciences Summer Institute (LSSI) Student Internship Program, has been developed to help increase awareness of the life science industry and related fields of research to students in the San Diego region. Students gain exposure to career options, hands-on laboratory experience, work readiness skills, and mentoring by a company or research scientists.

Through the eight-week program, which includes one week of non-paid pre-internship training followed by a 7-week paid internship, students are involved with a full-time research project as well as enrichment activities. Students learn how to formulate and test hypotheses, prepare experiments and draw conclusions from those experiments. They also learn to maintain laboratory notebooks and take part in regular lab meetings and group discussions. At the end of the program, students present their research projects to their mentors, lab members and families. In addition, students will develop scientific posters, reflecting on their summer experience and highlighting their research and future career goals. Posters will be displayed during a celebratory event.

The one week Biotechnology "Boot Camp" training prior to the internship will provide attendees with hands-on training in basic lab skills used in biomedical research. Lecture topics will include an overview of the life sciences industry, an introduction to the drug discovery process including regulatory issues (GLP, GMP, FDA) and safety training. Interactive modules will provide soft skills for work readiness. Two “Boot Camp” trainings will be held concurrently at the Southern California Biotech Center at Miramar College and Grossmont College. College credit for the training course may be available for qualified applicants.

BOOT CAMP DATES/LOCATIONS:

Miramar College/Grossmont College June 21, 2010-June 25, 2010

*Please note: Specific boot camp training location will depend on school, school district, and/or Research Institute.

Students may obtain an internship position (through an interview process) at one of San Diego’s world-renowned scientific research institutes, including: **Burnham Institute for Medical Research**, **La Jolla Institute for Allergy & Immunology, Salk Institute for Biological Studies, San Diego Supercomputer Center** or **The Scripps Research Institute** (TSRI). All students selected to intern at a research institute will be awarded $9.00 per hour (not to exceed 40 hours/wk) during their internship. Further information regarding each research institute and specialized program components can be found in the attached. In addition, some students may be selected to intern at a company within the life sciences industry.

Eligibility:

- Applicants must be San Diego County residents and have completed their most recent semester of high school at a public or private high school within San Diego County.
- Applicants must be at least 16 years of age on or before June 28, 2010.
- Applicants must have successfully completed at least one year each of high school level chemistry and biology.
- Applicants must have a minimum grade point average of 3.0
- Applicants must be able to commit to 40 hrs/wk for the duration of the program.
- Applicants under 18 must submit a blank work permit application (available from your high school career center)
- Applicants must be able to provide their own transportation.

A special emphasis is placed on identifying and recruiting students from groups that are historically underrepresented in the sciences (i.e., African-American, Hispanic, Native Pacific Islander, or Native American students).

Application and Selection:

Completed applications and supporting documentation (see checklist) must be provided as a single packet postmarked by **MARCH 29, 2010**. See page 6 of the application for each individual research institute’s interview and selection process and dates.

Application Guidelines:

Here are a few tips for making sure your application is the best representation of you!

Responsibilities:

- ✓ Students have complete responsibility for contacting LSSI with any questions and/or concerns they may have regarding the program and/or application. *If you aren't sure about something, if you're wondering about a document, if you're not sure how to fill something out or whether particular information needs to be included – ASK US! Your teachers, counselors, parents, etc. can certainly advise you but always be sure to double check with us about any details if necessary! Don't have your application rejected because you thought an instruction meant something different!*
- ✓ Be your own advocate! - It is important for the students to advocate for themselves. *YOU are applying for this position, not your parents. Any questions etc. need to come from you.*
- ✓ LSSI contact email address is: biotech@workforce.org. *Ask early and ask often!*

Application:

- ✓ All requested documentation must be submitted as a single packet postmarked no later than the deadline date (March 29, 2010). *This includes your recommendation letters in their own sealed envelopes.*
- ✓ Drop-off applications will NOT be accepted.
- ✓ Extra documentation (i.e. copies of certificates, awards, additional letters of recommendation, pictures, etc) will NOT be accepted and will be subject to disqualification.
- ✓ Print legibly where needed and/or type where you can and proofread all information submitted. *Neatness DOES count! Use ink, don't cross-out, white out, etc. It's not a timed essay – re-do any sections you need to.*

Resume:

- ✓ Resume (sample available on Google) should be no longer than one page, and include ONLY relevant information. *This is 'you at a glance' – keep it short, sweet, and to the point.*
- ✓ Suggested information/sections to include: contact information, education, any and all work experience, skills and abilities, and other relevant information as it applies to the internship program. *The spelling bee award from 3rd grade is nice, but doesn't have anything to do with the position you are applying for.*

Cover Letter:

- ✓ Cover letter (sample available on Google) is an introduction to yourself and explains why you are submitting an application.
- ✓ Should be no longer than one page.

Email Address:

- ✓ Life Sciences Summer Institute's staff and partners main form of communication is via email (primarily biotech@workforce.org).
- ✓ It is important that students include their own personal email address on their application. If necessary, please create a new email address that is professional and will only be used to communicate with LSSI and/or other employers.
- ✓ Examples of professional email addresses include: john.doe@yahoo.com, jdoe@hotmail.com, johnd@gmail.com.
- ✓ Examples of unprofessional email addresses include: skaterboy@gmail.com , foxylady@hotmail.com, gigglez27@yahoo.com
- ✓ Do not use your parent's email address. It is strongly suggested that you create your own.
- ✓ Verify that your email is legible on your application. *Make sure there's no confusion as to whether it's a number 1 or a lower case l etc. Consider writing your email as all caps for clarity if necessary since emails aren't case sensitive.*

If you have any questions regarding your application, LSSI, or any participating Institute, please email biotech@workforce.org.

Applicant Name: _____

LSSI High School Student Research Program Application Checklist

Please assemble your application in the following order:

1. Stamped, self-addressed Acknowledgement Postcard (you will need to include a postcard with your application) with the following message: "This acknowledges that your application for the LSSI High School Student Research Program has been received and is complete for further processing"
2. This checklist, placed on top of the rest of the documents, with the postcard affixed
3. Cover letter
4. Resume
5. Application form (please make sure all information is included and complete)
   a. Essay
   b. Media release form
6. High school transcript(s) (unofficial)
7. If necessary, a blank work permit application with your name on it.
8. Two recommendation forms with attached narratives. Recommendations should be from your biology teacher, principal, other teacher, advisor/counselor, or work supervisor who can evaluate your potential for this summer research experience, taking into consideration your accomplishments, intellectual prowess, independent work habits, capacity for critical and analytical thinking, and/or ability to organize and express ideas clearly and intelligently.
   It is strongly recommended that one letter of recommendation come from a math or science teacher.
   **Note: Please make sure each recommendation is in a sealed envelope*

I certify that this application packet is complete

_____
printed applicant name

_____ date: _____
applicant signature

Make a copy of your complete application packet for your records and submit all necessary (original) documents in a single envelope to the following address, POSTMARKED NO LATER THAN MONDAY, MARCH 29, 2010. *Please make sure your packet is postmarked and you retain your receipt.*

LSSI High School Student Research Program
Attn: Erika Aranguré
San Diego Workforce Partnership, Inc.
3910 University Ave., Suite 400
San Diego, CA 92105

***NOTE: LATE AND/OR INCOMPLETE APPLICATIONS WILL NOT BE ACCEPTED. ALL APPLICATIONS WILL BECOME PROPERTY OF THE SAN DIEGO WORKFORCE PARTNERSHIP AND WILL NOT BE RETURNED.**

Applicant Name: _____

Applicant Information:

Name**:** _____
Last First Middle

Mailing address: _____
Street Address or Post Office Box City/State Zip

Telephone: _____E-mail: _____

Date of birth: _____ Age as of June 28, 2010: _____
*Applicants must be at least 16 years of age at the beginning of the internship

Gender: ____ Male ____ Female

Ethnic Identification *(please check one)*:
___ Hispanic or Latino
___ White (Not Hispanic or Latino)
___ Black or African American (Not Hispanic or Latino)
___ Asian (Not Hispanic or Latino)
___ Native Hawaiian or Other Pacific Islander (Not Hispanic or Latino)
___ American Indian or Alaska Native (Not Hispanic or Latino)
___ Two or more races (Not Hispanic or Latino)

San Diego County High School: _____
School name District

Grade completed by June, 2010: _____ Current GPA: _____

Education/career goals:_____

If offered employment with a participating Institute, will you be able to provide documentation that you are a citizen, national, lawful permanent resident or alien authorized to work in the United States and at the Institute in the position applied for on the first day of work?

____Yes ____No

*As a condition of employment with an Institute, successful candidates must provide written documentation to prove either citizenship or proper authorization to work in the United States. Specific instructions will be provided prior to your first day of employment regarding legally required documentation.

Parent or Legal Guardian Information (if applicant is under 18):

Name**:** _____

Mailing address: _____
Street Address or Post Office Box City/State Zip

Telephone: (Home) _____ (Work) _____

Applicant Name: _____

Academic Background / Work Experience: (continue on additional paper if necessary)

List all coursework you have completed or are in the process of completing that specifically relates to an internship in research science (please include your most recent math and science courses, noting those that include laboratory work).

Course: Year taken: Grade Earned:

Briefly describe any hands-on lab experience you have: (lab experience is not a requirement for admission)

Employment History:

Employer: Dates employed: Hrs/wk: Position:

Applicant Name: _____

General Information:

Have you previously participated in any of the following internship programs?

Burnham Institute for Medical Research: ____Yes ____No

La Jolla Institute for Allergy & Immunology: ____Yes ____No

Salk Institute for Biological Studies: ____Yes ____No

The Scripps Research Institute: ____Yes ____No

Life Sciences Summer Institute: ____Yes ____No

Introductory Life Sciences Experience (ILSE): ____Yes ____No

If you answered yes to any of the above, please specify internship location, dates, and mentor or supervisor: _____

Do you have any relatives working or associated with any of the above participating Institutes? If yes, please provide their name and location: _____

How did you hear about the LSSI High School Student Research Program? _____

_____

Please list your parents'/guardians' highest level of education: (Example: Some High School, High School Diploma, Some College, College Diploma, Master's Degree, Ph.D.)

Mother/Guardian: _____

Father/Guardian: _____

Parents'/Guardians' Place of Employment: _____

Do you have any siblings? If yes, please list their ages: _____

Total number of people living in your household (including you):_____

Does your family receive public assistance, food stamps, SSI, SSA or unemployment insurance?

____Yes ____No

Do you live in a single parent household? ____Yes ____No

Total Family Income (6 months income):

___ <20,000 ___ 20,001-40,000 ___40,001-60,000 ___ 60,001-80,000 ___>80,001

Have you applied (or do you plan on applying) for any other summer position(s)? ____Yes ____No

If yes, where? _____

Do you have any prior commitments or circumstances that conflict with the internship program dates or limit your participation in a 40-hour work week? * ____Yes ____No

If yes, please explain. _____

_____

* Please note schedule of Spring Enrichment Tutorials held at The Scripps Research Institute on page 8 of this application.

Applicant Name: _____

Research Interests:

The LSSI High School Student Research Program includes laboratories focused on the overarching areas of neurosciences, genetics, biochemistry, chemistry, and immunology in addition to molecular, plant, computational, and cell biology. **Please rank your interest in the following areas 1 – 9 (1 being the highest interest and 9 being the lowest):**

____Neurosciences
Includes research studies which span the structure, function, evolutionary history, development, genetics, biochemistry, physiology, pharmacology, computational neuroscience and pathology of the nervous system.

____Molecular Biology
Molecular biology chiefly concerns itself with understanding the interactions between the various systems of a cell, including the interactions between genes encoded in the DNA, RNA and protein biosynthesis and learning how these interactions are regulated. Many other disciplines make use of techniques that molecular biology invented: DNA cloning, genetic manipulation etc. Molecular biology is at therefore at the basis of many other disciplines.

____Genetics
Involves studies of gene regulation and the involvement of genes in development and cancer, including patterns of inheritance.

____Plant Biology
The study of the mechanisms of plant growth control influenced by hormonal or environmental factors using a combination of molecular, cellular, genetic, biochemical, or genomic approaches. The higher plant Arabidopsis (the laboratory rat of the plant world) or the green algae Chlamydomonas or Volvox will be used as a model system.

____ Chemistry
Involves synthesis of medicinally relevant small molecules and natural products, design of synthetic routes, and development of novel methodologies which are widely applicable within the field. Disciplines include organic, inorganic, and organometallic chemistry.

____Computational Biology
An interdisciplinary field that probes the complexity of biology using techniques from computer science, applied mathematics, and statistics. This includes understanding protein and genome sequences (computational genomics), large amounts of experimental data such as gene expression profiles (bioinformatics) and computational modeling, which builds programs to simulate biological processes from cell division to organ growth to brain function.

____Biochemistry
The next step up from molecular biology, biochemistry combines synthetic organic chemistry and chemical principles to study molecular design, chemical synthesis, and biological investigations of molecules with specific biological actions such as enzyme inhibitors, DNA cleaving molecules, antitumor agents, and chemical catalysts. The main focus of biochemistry is on the function of proteins, the actual effectors of genes. Biochemists will research if and how proteins become modified when cells receive a certain signal, if proteins travel to different parts of the cells to activate a certain pathway etc.

____Cell Biology
Includes studies of cells' physiological properties, their structure, organelles, environmental interactions, their life cycle, division and death.

____Immunology
Research topics include physiological functioning of the immune system in states of both health and diseases; the response to bacteria and viruses, improvement of vaccines, malfunctions in immunological disorders (autoimmune diseases, hypersensitivities, immune deficiency, allograft rejection); and the physical, chemical and physiological characteristics of the components of the immune system in vitro, in situ, and in vivo.

Applicant Name: _____

PLEASE RESPOND TO THE FOLLOWING IN YOUR OWN HANDWRITING:
Briefly explain your ranking of the Research Interests listed on the previous page, including any strong preferences you have for or against working in any specific area. 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).

Essay: Please briefly address the following topics in a short essay, not to exceed 1000 words.
Please attach your typed essay to your completed application packet

- What area of science research are you most interested in? Please relate this to a past personal or classroom experience.
- What benefits do you hope to gain from a research internship?
- Describe your extracurricular interests and hobbies, including any honors or awards.

Applicant Name: _____

Program Parameters & Preference:

Please include my application packet for review by the following (Check all that apply):

☐ BURNHAM INSTITUTE for MEDICAL RESEARCH
From Research, the Power to Cure

Burnham Institute for Medical Research (BIMR) *High School Student Internship Program* is dedicated to exposing students to basic biomedical research by providing hands-on experience in our laboratories. BIMR is committed to training the next generation of scientists. Our summer program exposes young scientists to the tools, knowledge and resources needed to further excite and encourage them to pursue a career in scientific research. BIMR will begin its interview process in Mid-May.

☐ SDSC SAN DIEGO SUPERCOMPUTER CENTER

The San Diego Supercomputer Center (SDSC) at the University of California, San Diego *High School Summer Research Program* invites San Diego area high school students every summer to participate in hands-on computational bioinformatics experiences under the mentorship of SDSC scientists. Founded in 1985, the SDSC enables international science and engineering discoveries through advances in computational science and high performance computing. Continuing this legacy into the era of cyberinfrastructure, SDSC is a strategic resource to science, industry and academia, offering leadership in the areas of data management, grid computing, bioinformatics, geoinformatics, high-end computing as well as other science and engineering disciplines. The San Diego Supercomputer Center will begin its interview process in late April with final notification no later than May 15, 2010.

☐ SALK INSTITUTE FOR BIOLOGICAL STUDIES

Salk Institute for Biological Studies *High School Summer Enrichment Program* gathers San Diego area high school students at the Institute every summer to participate in hands-on laboratory experiences under the mentorship of Salk scientists. Founded more than 30 years ago, the program helps fulfill Dr. Jonas Salk's vision of providing opportunities for local high school students to experience life in a scientific laboratory, and explore the possibility of a career in science. The Salk Institute will begin its interview process in Mid-May with final notification no later than May 31, 2010

☐ LIAI LA JOLLA INSTITUTE for ALLERGY & IMMUNOLOGY

La Jolla Institute for Allergy & Immunology (La Jolla Institute) *High School Internship Program* strives to introduce basic biomedical research as a career possibility through immersion in a hands-on laboratory environment, exploring the immune system, at the molecular and cellular levels. Our goal is to emphasize the role of the immune system in maintaining health and preventing disease, and to impart our unique mission, to advance progress toward the improvement or vaccines and the prevention, treatment and cure of immune system diseases, to our student interns. Experience the impact that researchers can have on the world! Finalists will need to complete on-site HR orientation and safety trainings prior to the start of the internship. Interviews will be conducted in April-May 2010.

☐ THE SCRIPPS RESEARCH INSTITUTE

The Scripps Research Institute (TSRI) *High School Student Research Education Program* exposes students to contemporary issues in biomedical research and provides hands-on laboratory experience and mentorship. It is committed to increasing the number of local students who choose a career in the biological and chemical sciences, particularly first-generation college-bound students and students from groups that are underrepresented in science. Students selected for an internship at TSRI must attend 5 consecutive Spring Enrichment Tutorials held on Wednesday afternoons starting on May 19th. Phone interviews for finalists will begin on April 23rd with acceptance to the Spring Enrichment Tutorials no later than May 3rd, 2010.

☐ **Please also include my application for review by life science industry companies located in San Diego.**

Applicant Name: _____

Some research projects involve the use of laboratory animals, including mice. Please indicate your preference about working with laboratory animals by checking one of the spaces below:

___ I am comfortable with the use of animals being used to advance biomedical research and am not adverse to working at an institution that uses animals for the purpose of biomedical research; but do not wish to have direct exposure or interaction with such research.

___ I am comfortable with the use of animals being used to advance biomedical research and am not adverse to working at an institution that uses animals for the purpose of biomedical research; and would accept a position that requires direct exposure to animal research or procedures involved with animal research.

___ I am adverse to animals being used for the purpose of biomedical research and do not wish for my application to be given further consideration.

*Note: All research institutes involved with this program comply 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 Institute's Animal Care and Use Committee, and students who will work with animals attend training sessions before handling animals.

Working with Stem Cells:

Some research projects may involve the use of stem cells. Please indicate your preference about working with stem cells by checking one of the spaces below:

___ I am comfortable with stem cells being used to advance biomedical research and am not averse to working at an institution that uses stem cells for the purpose of biomedical research; but do not wish to have direct exposure or interaction with such research.

___ I am comfortable with stem cells being used to advance biomedical research and am not averse to working at an institution that uses stem cells for the purpose of biomedical research; and would accept a position that requires direct exposure to stem cells or procedures involved with stem cell research.

___ I am adverse to stem cells being used for the purpose of biomedical research and do not wish for my application to be given further consideration.

*Note: All research institutes involved with this program comply with government regulations and guidelines for stem cell research.

Applicant Name: _____

MULTIMEDIA PUBLICITY/PRIVACY RELEASE

I hereby irrevocably grant to San Diego Workforce Partnership, Inc., its subsidiaries, affiliates, nominees, licensees, their successors and assigns, and those acting with its authority (hereinafter collectively referred to as "SDWP"), with respect to (a) my story, (b) voice, and/or (c) photographs, film or tape (the "Materials") taken of me or relating to me by or on behalf of SDWP, the unrestricted, absolute, perpetual, worldwide royalty-free license and right to:

(1) Reproduce, copy, modify, create derivatives in whole or in part, or otherwise use the Materials or any part thereof in combination with or as a composite of other matter, including, but not limited to, text, data, images, photographs, illustrations, animation and graphics, video or audio segments of any nature, in any media or embodiment, now known or hereafter to become known, including, but not limited to, all formats of computer readable electronic, magnetic, digital, laser or optical-based media (the "Works"), and

(2) Use and permit to be used my name, whether in original or modified form, in connection with the Works as SDWP may chose, and

(3) Display, perform, exhibit, distribute, transmit or broadcast the Works by any means now known or hereafter to become known.

Waiver and Release

I hereby waive all rights and release SDWP from, and shall neither sue nor bring any proceeding against any such parties for, any claim or cause of action, whether now known or unknown, for defamation, invasion of privacy, publicity or personality, false light, or any other matter, whether based upon or relating to the use and exploitation of the Materials or otherwise.

I agree that there shall be no obligation to utilize the authorization granted by me hereunder. The terms of this authorization shall commence on the date hereof and be without limitation.

Sign Here⇨_____ Print name_____ Date:_____

Witness Sign Here⇨_____ Print name _____ Date:_____

If I am under 18, my parent or legal guardian has read this release and is fully familiar with its contents. We approve and agree to the foregoing. My child is ____ years of age.

Parent/Guardian Sign Here⇨_____ Print name _____ Date: _____

Witness Sign Here⇨_____ Print name _____ Date: _____

Applicant Name: _____

Certification / Consent:

___ This certifies that the information I have entered on this form is complete and accurate.

___ I acknowledge that I will treat as confidential all information that I may read or hear, directly or indirectly. If accepted for the LSSI High School Student Research Program, I agree to conform to the rules and regulations of the Institute. I understand that I will be required to attend an Orientation Program and participate in any training specific to my assignment. I acknowledge that either the Institute or I may discontinue my status at any time and for any reason.

___ If accepted for the LSSI High School Student Research Program, I will attend the program in its entirety, from June 21, 2010-August 13, 2010.

Signature of applicant:

_____ Date: _____

Parental Permission (if applicant is under 18)

___ This certifies that I approve of this application and that the applicant has my consent to participate if selected.

___ I understand that my son/daughter may be working with hazardous chemicals, radioactive materials and biological materials. Student interns will be provided training in the safe handling of these items.

___ I understand that the LSSI High School Student Research Program runs from June 21, 2010-August 13, 2010 and my son/daughter will be required to attend the program in its entirety.

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

_____ Date: _____

Please complete this recommendation form and return it to the applicant in a sealed envelope.

Applicant's Name (please print): _____

Name of Evaluator: _____

Evaluator's Title: _____ Institution: _____

Address: _____

Telephone: _____ Email: _____

How long have you known the applicant? _____

In what capacity? _____

Please place check marks in the boxes that represent your evaluation of the applicant.

	Below Average	Average	Excellent	Outstanding	No basis for judgment
Energy and initiative					
Ability to work independently					
Ability to work in a group					
Fulfills goals					
Works to capacity					
Oral expression					
Written expression					
Originality					
Social maturity					
Self-confidence					
Dependability					
Disciplined work habits					

In an attached letter please provide additional comments that will help us to assess this applicant. Areas that might be addressed include:

The benefits you feel the applicant would receive from this program and what he or she might contribute;

Personal qualities of the applicant that might particularly recommend him or her for this program;

Any awards, special activities, and projects that indicate talent and potential in the sciences; and

Any necessary explanation, if the student's academic record does not seem to accurately reflect his or her abilities.

Signature: _____ Date: _____

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

Please complete this recommendation form and return it to the applicant in a sealed envelope.

Applicant's Name (please print): _____

Name of Evaluator: _____

Evaluator's Title: _____ Institution: _____

Address: _____

Telephone: _____ Email: _____

How long have you known the applicant? _____

In what capacity? _____

Please place check marks in the boxes that represent your evaluation of the applicant.

	Below Average	Average	Excellent	Outstanding	No basis for judgment
Energy and initiative					
Ability to work independently					
Ability to work in a group					
Fulfills goals					
Works to capacity					
Oral expression					
Written expression					
Originality					
Social maturity					
Self-confidence					
Dependability					
Disciplined work habits					

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Any awards, special activities, and projects that indicate talent and potential in the sciences; and

Any necessary explanation, if the student's academic record does not seem to accurately reflect his or her abilities.

Signature: _____ Date: _____

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