



## Summer Laboratory Science Program

December 3, 2007

Dear Student,

The Summer Laboratory Science Program at Mayo Clinic offers chemistry, human biological science, clinical laboratory science and medical technology majors the opportunity to explore career options and gain experience in the clinical laboratory environment. Clinical laboratory work is different from research work in that a patient's diagnosis, treatment, and health may be directly dependent upon the laboratory testing results.

Our scientists are part of an interdisciplinary team of healthcare professionals dedicated to patients' health. In the laboratory, our scientists work with blood, tissue, and body fluid specimens. They perform tests from the simple to the complex, using manual methods and state-of-the-art instruments, and are responsible for the accuracy of the results they generate.

As a Summer Laboratory Science Program participant, you will work in one of our clinical testing laboratories specializing in the areas of biochemistry, immunology, microbiology, genetics, and hematopathology. You will assist our laboratory personnel in aliquotting, preparing, extracting, and centrifuging biological specimens collected from patients. **This is not a research program.** For research interests visit <http://www.mayo.edu/mgs/surf.html>.

To participate in the Summer Laboratory Science Program, you must be completing your junior year of a four-year baccalaureate program in biology, chemistry, clinical laboratory science, microbiology, molecular biology, molecular genetics, or other biomedical science related field.

The program requires a commitment of a minimum of 12 weeks in length beginning June 4th and ending August 29<sup>th</sup>. There is the possibility of extending employment in August. Applications are due by February 29th, 2008. The assignments are full-time, 40 hours/week, at an approximate wage of \$12.75/hour. You may choose to reside at Evanston Heights which is partially subsidized by Mayo Clinic or choose to provide your own housing.

The Summer Laboratory Science program is an exciting opportunity for students to explore the field of clinical laboratory science and to consider permanent employment at the Mayo Clinic upon graduation.

Sincerely,

Connie Austvold  
Human Resources



*Summer Laboratory Science Program  
Application for Employment*

No question on this form is asked for the purpose of limiting or excluding any applicant's consideration because of race, color, creed, national origin, age, marital status, religion, or status with regard to public assistance, membership, or activity in a local commission or disability.

Applicant's Anticipated Graduation Date \_\_\_\_\_

PERSONAL DATA

Name \_\_\_\_\_

First Middle Last

Present Address \_\_\_\_\_ Phone \_\_\_\_\_

Street City State Zip Area Number

Permanent Address \_\_\_\_\_ Phone \_\_\_\_\_

Street City State Zip Area Number

E-mail Address \_\_\_\_\_

Social Security Number -- - ---

Are you at least 16 years of age? Yes  No

Are you a U.S. citizen or national, permanent resident, a refugee, an asylee, or authorized to work under the amnesty provisions of U.S. immigration law? Yes  No  It is not Mayo Clinic in Rochester's policy to assist foreign individuals in obtaining authorization from the U.S. immigration authorities for employment in certain job categories. Mayo Clinic reserves the right to revoke an offer of employment to any person who needs assistance from Mayo Clinic to acquire or extend necessary employment authorization from U.S. immigration authorities and to terminate any employee whose employment authorization may have expired.

Have you ever been convicted of a crime (excluding parking and petty misdemeanor traffic tickets)? Conviction doesn't necessarily bar you from employment. Yes  No

If YES, describe in full: \_\_\_\_\_

EDUCATION DATA: Complete spaces below and **submit a current college transcript.**

	Name of School	City & State	Major/Degree
Last High School			
College/ University			
Additional Education			

NOTE: If your school or employment records are under another name, please indicate that name: \_\_\_\_\_

## EMPLOYMENT HISTORY

Starting with your present or most recent employer, please list positions you have had. Do not omit work experience just because it may be unrelated to the job for which you are applying. Please fill out completely. **Resumes are welcome but are not a substitute for this section.**

1. Present or Last Employer		Address		City	State	Zip	Description of Duties
Telephone Number Area Code ( )		From (Mo., Yr.) to (Mo., Yr.)		Job Title			
Your Supervisor's Name	Reason for Leaving		Salary	May we contact? Yes <input type="checkbox"/> No <input type="checkbox"/>			
2. Present or Last Employer		Address		City	State	Zip	
Telephone Number Area Code ( )		From (Mo., Yr.) to (Mo., Yr.)		Job Title			
Your Supervisor's Name	Reason for Leaving		Salary	May we contact? Yes <input type="checkbox"/> No <input type="checkbox"/>			

If not included above, have you ever been employed by any Mayo entity? Yes  No

Dates \_\_\_\_\_ Title \_\_\_\_\_ Name of Institution \_\_\_\_\_

What was your name when employed? \_\_\_\_\_

**Prior to June**, you will need to have 90 semester hours, or equivalent, from an accredited institution that, at minimum, meets the following three sets of conditions:

1. 24 semester hours of science courses that include one of the following:
  - a. 16 hours of chemistry, 6 of which is inorganic chemistry **or**
  - b. 16 hours of biology

**and**

  - c. 3 hours of mathematics
2. 6 semester hours of chemistry, 6 semester hours of biology and 12 additional semester hours of related chemistry, biology or medical laboratory technology courses in any combination.
3. GPA 2.75 overall, 3.0 major

Yes  No

### PLEASE READ CAREFULLY AND SIGN BELOW

I hereby authorize investigation of all statements contained in this application. I release Mayo from any and all liability resulting from such investigation. I affirm that all information contained in this application is true and complete and that any misrepresentation, falsification, or willful omission herein shall be sufficient reason for dismissal and/or refusal of employment. I understand that employment is subject to satisfactory reference reports, satisfactory completion of a pre-employment medical examination and authorization of employment in the United States.

I understand that all conditions of employment, including but not limited to, hours, benefits, and salary are subject to change by Mayo at any time without prior notice to employees, subject to its obligations under the terms of any currently effective collective bargaining agreement. I also understand that employment at Mayo is "at will" employment and may be terminated at any time by either party. I further understand that I am required to abide by all rules and regulations of Mayo.

I certify the information provided above is true and complete to the best of my knowledge. I have read and understand the statements in the paragraphs above. By signing here, I am also verifying information on my resume if I chose to include one.

DATE \_\_\_\_\_ APPLICANT'S SIGNATURE \_\_\_\_\_

*Summer Lab Science Program Interests and Expectations*

1. Why do you have an interest in the Summer Lab Science Program?

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2. Please give a brief explanation of your goals and expectations at the completion of the Summer Lab Science program.

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3. What are your plans upon graduation?

Graduate School  Medical School  Employment  Unsure





## Mayo Clinic - Faculty Summer Lab Science Program Reference

Dear Faculty Member:

I am submitting an application for Summer Lab Science Program summer work experience at Mayo Clinic, Rochester, Minnesota.

Will you please complete the evaluation and return it to me in a sealed envelope. I must have my application to Mayo Clinic by 5pm on February 29, 2008.

Thank you for your assistance.

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Name of Student (please print)

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Name of School

Faculty  
Summer Lab Science Program  
Reference Request

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**Student Name (please print)**

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Based on your experience with the student, please evaluate the student on the following items and use the scale on the right.

	Very Good (top 10%)	Good (top 25%)	Average	Below Average
<i>WORK SKILLS</i>				
1. Organization of work	1	2	3	4
2. Laboratory skills	1	2	3	4
 <i>ATTITUDES TOWARD WORK</i>				
1. Attitude toward learning new skills	1	2	3	4
2. Ability to adjust to new situations	1	2	3	4
3. Integrity	1	2	3	4
 <i>PERSONAL QUALITIES</i>				
1. Presentation	1	2	3	4
2. Attendance	1	2	3	4
3. Communication skills	1	2	3	4

What are the applicant's major strengths?

What areas need further improvement?

What is your overall evaluation of this student compared with others at the same level in your program?

Completed by: \_\_\_\_\_ Title: \_\_\_\_\_

School: \_\_\_\_\_

## Summer Lab Science Program Position Descriptions

Mayo realizes that not all science students like the same type of work. The clinical work that this program provides may not be for everyone. This is a clinical laboratory program. **Those wanting a research experience are advised to apply to the Mayo Clinic Summer Undergraduate Research Fellowship.** In an effort to better match the student's expectations with the type of work, we are providing a brief explanation of the type of work the students performed in the past. This list is not intended to define the work that will be performed.

### Metals Laboratory:

The SLSP student's responsibility was primarily to assist in the analysis of urinary calculi, lead in whole blood, and to prepare stool samples for analysis. Urinary calculi analysis involves a physical examination of the stone followed by washing and drying if necessary, weighing, and finally crushing into a fine powder. The powder is then analyzed by Fourier Transform-Infrared Spectroscopy and the resulting spectrum is analyzed to determine the chemical composition of the sample. The student will perform a cursory analysis of the spectrum, with conformational analysis and sign-off by a technologist. Lead blood analysis: after the instrument has been calibrated by a technologist, the student performs dilutions of the blood with water and hydrochloric acid. Printed results from the instrument are then transcribed to worksheets and reviewed by a technologist. The Metals position was M-F, days.

### Drug Laboratory:

The SLSP responsibilities were to perform routine testing in the HPLC area. He was involved with sample pre-analytic processing; organic liquid-liquid drug extractions, instrument set up for appropriate analysis, daily preventative maintenance on instruments, building sequences on Shimadzu HPLC systems, placing samples on the instrument and reagent preparation. The responsibilities covered 17 different procedures. He was also exposed to the Lab3 computer system because he was responsible for building his own worklists and printing/reviewing pending lists. He was also exposed to the manual review of the chromatography enough so that he could notify either a technologist/support technologist if there were problems with an assay. He was not allowed to review or report results. The position was M-F, 8 to 5.

### Biochemical Genetics Lab (BGL):

The SLSP students were responsible for pre-analytical activities including aliquotting, centrifugation, liquid-liquid extractions, pipetting and loading of various instrumentation. These tasks were performed for the Quantitative Porphyrin and Organic Acids tests. The students were also involved with the preparing of test reports and had the opportunity to assist in the data retrieval from the instruments. The BGL position was M-F day shift.

### Molecular Genetics Lab:

The SLSP student assessed the quantity/quality of DNA specimens using a DU-650 Spectrophotometer. The DNA was subsequently used for clinical PCR and Southern blot assays run by routine laboratory technologists, to identify genetics diseases. In addition, last year, time permitted for the student to learn a couple of methods of DNA extraction. DNA extraction can be done using a variety of methods and/or kits. The Molecular Genetics laboratory primarily uses the Genra AutoPure LS to extract DNA. It is an automated DNA extractor using reagents to desalt out the DNA. In addition, the student experienced a manual method of DNA extraction using Phenol and Chloroform. The Molecular Genetics position was a M-F day shift.

### Bacteriology Lab:

Students in Bacteriology worked as part of the lab team in the identification of bacteria isolated from clinical specimens. They reviewed cultures for the presence of bacterial growth. The student worked under the direction of a lab technologist and performed subcultures of isolates and performed rapid biochemical tests for identification (latex agglutination, fluorescent spot tests, disk tests, enzymatic tests, etc.). The students also spent time in other areas of bacteriology in an observational mode. These positions were on the day shift and included working every other Saturday.

### Hematopathology/Morphology Lab:

The SLSP students' duties in the Hematopathology/Morphology Lab primarily assisted in the bone marrow collection(s) of patients. The position detailed daily patient contact in the various collection sites (hospital settings/OR rooms, sedated

center, and/or unsedated rooms). The student accompanied a bone marrow nurse who collected the bone marrow and she/he would access the quality of the collection, aliquot the sample into the appropriate collection tubes, prepare both bone marrow and peripheral smear slides, and pre-process the samples in the laboratory. The student also did various duties of cleaning and filing slides, pre-ordering/scheduling bone marrow collections, and assembling/labeling individual patient paperwork and worksheets. The Morphology position was Mon-Fri, days.

#### Cell Kinetics Lab:

Last year the student's function for the time in Cell Kinetics was to learn two lab tests that were carried through the processing steps. The student learned to use flow cytometry equipment that utilized a laser and fluorescently tagged antibodies to quantify and sub-type lymphocytes and other blood cells. The student worked closely with 10 technologists MT/MLT's as well as the laboratory consultant, education technologist and supervisor. The hours were M-F from 8:00 to 4:30.

#### Metabolic Hematology Lab:

The duties for the SLSP student in the Metabolic Lab will primarily be performing 3 laboratory tests. Two tests, the Osmotic Fragility test and the Band 3 Fluorescence test are used to help diagnose patients with Hereditary Spherocytosis. The third test to be performed is the Red Cell Folate test. This test is used to help physicians explain a macrocytic anemia. The student will use whole blood to perform the tests and will be using spectrophotometric methods. The student will be doing other duties such as: sort samples, track samples, and prepare patient worksheets. The Metabolic position will be Monday through Friday, 7:30 to 4:00.

#### Immunology Antibody Lab:

The SLSP student performed testing in our FEIA (fluoroenzymeimmunoassay) area. This is a high volume area in the lab with about 14,000 tests per month. The testing in this area includes approximately 420+ specific IgE allergens, Total IgE levels and Hypersensitivity Pneumonitis IgG levels. The primary tasks the student was able to perform included sorting of samples, building worklists, putting samples on an automated pipettor, adding ImmunoCAPS, putting assay plates on the analyzer and putting plates into a fluorocount to read. The student was also given instruction in the evaluation process for these assays. The student aided in the preventative maintenance of all equipment used in these assays. Inventory management instruction was also included. On down time the student was taken to other areas in the lab to observe ELISA, IFA and Bio-Assay techniques using both manual and automated methods. Our student was also able to help in lab cleaning, unpacking and marking standing order lab supplies and other support functions. The student interacted with a lab of 12 MT/MLT's as well as the laboratory consultant, assistant supervisor and supervisor. The hours were M-F from 7:30:00 to 4:00.

#### Protein Immunology:

The student concentrated using specimens in preparation for electrophoresis and immunofixation. The student applied the patient specimens to the electrophoresis gels prior to placing on the electrophoresis instruments. Placing samples onto the automated instrumentation was also a responsibility for the student. The student assisted in other laboratory processes such as tracking specimens in and out of the lab and storing specimens after testing is completed. The hours were M-F, 6:30-3:00pm.

#### Hepatitis / HIV Testing Laboratory

The Hepatitis / HIV Testing Laboratory is a full-service clinical laboratory which provides FDA-mandated screening serologic tests for transfusion-transmitted microbial pathogens in blood, tissue, and organ donors, as well as routine diagnostic serologic and molecular tests for viral hepatitis and HIV in blood samples from patients. The SLSP student's responsibilities included: specimen processing (tracking in, aliquoting, sorting, and forwarding), instrument maintenance followed by validation by the bench technologists, Workload Recording, instrument evaluations, test kit evaluations, and producing monthly tally's. In addition, an occasional weekend was worked to gain experience and knowledge through such shifts.

- In addition to the above, other laboratories may be participating in the program.