The Waksman Student Scholars Program  
Sponsored by  
RUTGERS UNIVERSITY  
Waksman Institute

FOR WHOM: HIGH SCHOOL STUDENTS who have completed at least one Biology course  
[Teams of two students and a teacher from each participating school]

WHEN: July 6, 2015 – July 24, 2015 and during the 2015-2016 academic year  
[when the research is conducted at your school].

WHERE: Rutgers University, Waksman Institute, Piscataway, New Jersey  
(Participants commute daily to the University.)

WHAT: The Waksman Student Scholars Program (WSSP) is a yearlong program that provides  
students with the opportunity to take part in a challenging research investigation. Basic  
concepts and relevant themes in molecular biology are explored in conjunction with a  
strong laboratory component. Throughout the summer Institute and during the academic  
year, emphasis is placed also on bioinformatics, computational biology, using the  
resources found on the Internet, and electronic communications.

FUNDING: Supported by Rutgers University and the National Science Foundation.

REQUIREMENTS:

• Students must have completed at least one course of high school biology.
• Students must be entering the 10th, 11th or 12 grade in September 2015.
• Students must attend each day of the full three-week summer Institute.
• Participation with your Team in some of the after school, academic year follow-up  
meetings (a minimum of six meetings at Rutgers, which are scheduled in advance).
• During the academic year, schools support the work of the WSSP Team by offering a  
formal research course or an after school club at the high school.

OTHER:

• There is no student fee for participation in the summer Institute.
• Students receive copies of materials and related supplies during the summer.
• Scholars who participate in the summer Institute form the nucleus for a larger group  
of students who work together on the research question back at your school during the  
academic year.
• Alumni of the WSSP can participate in related activities during the academic year,  
including Protein Modeling.

Completed applications should be sent to:  
Dr. Andrew K. Vershon, Project Director  
Rutgers University Waksman Institute  
190 Frelinghuysen Road  
Piscataway, New Jersey 08854-8020

APPLICATION DEADLINE: Friday, March 13, 2015

Teachers will be notified of your school’s selection into the 2015 WSSP by Wednesday, April 1, 2015.
The Waksman Student Scholars Program provides avenues for high school science students to participate in research in molecular biology and bioinformatics. Teams learn about genetic engineering, genomics, molecular biology and bioinformatics by working on a research problem in these fields. This is a year long program that:

* begins with a three week summer Institute (July 6, 2015 – July 24, 2015).
* continues back at each high school during the academic year when more students can become involved;
* and concludes the following spring with the Waksman Forum Poster Session.

High schools participating in the Waksman Student Scholars Program (WSSP) are represented during the summer Institute by a team made up of one Student Scholar and with leadership from a Team Teacher. Each high school Team is selected using a competitive application process. Students apply for the Waksman Student Scholars Program (WSSP) Teachers apply to the NSF funded program – Conducting Authentic Molecular Biology and Genomics Research in High Schools (MBGR).

The research project for the 2015/2016 year focuses on the genomic sequence analysis of a Duckweed plant from the Lemnaceae family and how the genes in this organism compare to other species. We’ll begin our work on the project by isolating and sequencing genes. These gene sequences have never been determined and the results of the final analysis of these data conducted by your students will be deposited in the international sequence databases for other scientists to use. We will compare these sequences with genes from other eukaryotes to determine the evolutionary relationship of these organisms and the sequence conservation of specific genes. Most of modern molecular biology and related scientific fields rely on the use of computational technologies to analyze data, and bioinformatics will be strongly emphasized.

Teams begin their work by attending a three-week summer Institute at the Rutgers University Waksman Institute, a premier research institution that specializes in fields such as Developmental Genetics, Cell Biology, and Molecular Genetics. During this time, students learn about experimental design, research methodology, laboratory procedures, data collection and analysis, scientific reporting, the integration of computer technologies, and the presentation of findings. Also, students learn about career opportunities in the fields of science, technology, and education. In addition to becoming familiar with the laboratory skills and investigative techniques required for the Student Scholars to conduct their research, there will be a strong emphasis on the use of information technology and bioinformatics.

A unique component of the WSSP is that the research initiated in the summer continues during the academic year when the research investigations are actually conducted back at each high school. Scholars who participated in the summer Institute form the nucleus for a larger group of students back at each school. This larger group works together on the research question with guidance from their Team Teacher.

A variety of activities support the research work of the Scholars during the academic year. Teams maintain an ongoing association with project faculty and scientists by using the school’s electronic communications capabilities. Students will conduct DNA sequence analyses using the DNA Sequence Analysis Program or DSAP. A series of six follow up workshops will be held at the Waksman Institute. Materials and supplies necessary to conduct the research at the schools will be provided (high cost equipment cannot be provided but some equipment can be loaned to the schools ). The 2015 WSSP will conclude in late spring, 2016, when Student Scholars present their work at the annual Waksman Forum Poster Session.

The WSSP will be entering its twenty third year with the start of the 2015 Program.

For additional information about the WSSP, visit our Home Page at:

http://wssp.rutgers.edu

or contact:

Susan Coletta, Sr. Science Education Specialist
Waksman Institute - Rutgers University
190 Frelinghuysen Road
Piscataway, New Jersey 08854-8020
Phone: (848) 445 – 2038
FAX: (732) 445 – 5735

Email (best): coletta@waksman.rutgers.edu
NAME_________________________________________________________DATE_____________________

AGE_________E-MAIL (personal)_____________________________________________________

HOME ADDRESS______________________________________________________________

CITY, STATE________________________________________________________ZIP___________

HOME PHONE______________________YOUR CELL PHONE__________________________

NAME OF PARENT OR LEGAL GUARDIAN______________________________________________

DAYTIME/BUSINESS PHONE OF PARENT/GUARDIAN____________________________________

ETHNIC ORIGIN INFORMATION (optional)GENDER INFORMATION (optional)

____ American Indian/Alaskan Native ____ Hispanic

____ Pacific Islander ____ Asian ____ Male ____ Female

____ Black, non Hispanic ____ White, non Hispanic

GRADE YOU WILL BE ENTERING IN SEPTEMBER, 2015______________________________

SCHOOL NAME______________________________________________________________

SCHOOL ADDRESS___________________________________________________________

CITY, STATE_________________________________________________________ZIP___________

PRINCIPAL’S NAME____________________________________________________________

GUIDANCE COUNSELOR’S NAME___________________________________________

CURRENT SCIENCE TEACHER’S NAME___________________________________________

Please indicate the name of your high school science teacher who will work with your WSSP Team in September, 2015:

______________________________________________________________

Has your high school participated in past Waksman Student Scholars Programs? ___Yes ___No
2015 Waksman Student Scholars Program

Student Application

ACADEMIC INFORMATION

<table>
<thead>
<tr>
<th>Science and Mathematics Courses completed as of June, 2015</th>
<th>Grade received</th>
<th>Year Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BACKGROUND INFORMATION

<table>
<thead>
<tr>
<th>- Extra Curricular Activities - including clubs, volunteering, other summer programs, &amp; employment</th>
<th>Position Held</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**** ENDORESEMENT OF YOUR APPLICATION ****

Please have your guidance counselor or a science teacher and your parent/guardian endorse your application to the 2015 WSSP by signing below.

I acknowledge and support this application of __________________________

Name of High School Student (Applicant) (please print)

to the 2015 Waksman Student Scholars Program. I understand that if selected, s/he is expected to participate in each day’s activities for the full three-week summer Institute.

______________________________________________________________

Signature of High School Student

Date

______________________________________________________________

Signature of Parent or Guardian of Applicant

Date

Guidance Counselor or Teacher Name (print) Guidance Counselor or Teacher Signature

PERSONAL STATEMENT

If you have already participated in the WSSP at your school, please respond to the following, limiting your essay to 200 words:

Describe how the WSSP project is conducted at your school. What laboratory activities did you work through? Have you done bioinformatics using DSAP? Why do you want to participate in this summer’s Institute?

If you have not participated previously in the WSSP research, please respond to the following, limiting your essay to 200 words:

Describe your most “interesting” high school activity or situation that deals with science. Why was this interesting? How has this experience influenced you?

TO COMPLETE YOUR APPLICATION, PLEASE INCLUDE A COPY OF YOUR HIGH SCHOOL TRANSCRIPT & CURRENT REPORT CARD WITH YOUR APPLICATION