

The Waksman Student Scholars Program

Sponsored by

RUTGERS UNIVERSITY

Waksman Institute

FOR WHOM: HIGH SCHOOL STUDENTS who make a year-long commitment to the WSSP and who have completed at least one Biology course
{students selected to attend the summer Institute are expected to assume a Leadership Role by working closely with their school's Team Teacher during the academic year}.

WHEN: July 5, 2018 – July 20, 2018 *and* during the 2018-2019 academic year
{Summer Institute Scholars are expected to assume a Leadership Role during the academic year, when the research is conducted with other students at your school}.

WHERE: 2018 summer Institute: Rutgers University, Waksman Institute, Piscataway, New Jersey (Non-residential: participants commute daily to the University.)

2018-2019 Academic Year: At your high school.

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. Summer Institute Scholars take on a Leadership Role during the academic year when the research project is conducted with other students at your school. Throughout the summer Institute and during the academic year, emphasis is placed on bioinformatics, computational biology, using the resources found on the Internet, and electronic communications.

FUNDING: Supported by Rutgers University.

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 2018.
- Students must attend each day of the full three-week summer Institute.
- Students are expected to be Leaders for the WSSP research project in their schools and work closely with their Team Teacher during the school year.
- 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 WSSP summer Institute. Lunch is not provided.
- Summer student Scholars receive copies of materials and related supplies in July.
- During the 2018-2019 academic year, a larger group of students are introduced to the project back at your high school. The Scholars who participated in the summer Institute are expected to work closely with their Team Teacher and take on a Leadership Role for the WSSP research project by making ongoing contributions and working with this larger group of students.
- Alumni of the WSSP can participate in related activities during the academic year.

Completed applications
should be sent to:

Susan Coletta, Science Education Specialist
Rutgers University Waksman Institute
190 Frelinghuysen Road
Piscataway, New Jersey 08854-8020

APPLICATION DEADLINE: Wednesday, March 21, 2018

Teachers will be notified of your school's selection into the 2018 WSSP by Friday, March 30, 2018.

PROGRAM INFORMATION

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 5, 2018 – July 20, 2018).
- * 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 that are selected to participate in the *Waksman Student Scholars Program (WSSP)* are represented during the summer Institute by a Student Scholar or, if your school is new to the Program, a Team made up of one or two Student Scholars and their Team Teacher. Separate applications for the summer Institute are available upon request by teachers for students (Student Application) and their teacher (Teacher Application). Each high school Team is selected using a competitive application process. Students who are selected to participate in the summer Institute are expected to assume a Leadership Role and work closely with their Team Teacher during the academic year.

Tentatively, the research project for the 2018/2019 year focuses on the genomic sequence analysis of a Duckweed plant from the *Landoltia* family and how the genes in this organism compare with 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, vetted analyses of these data conducted by 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 13-day 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 analyses, 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 are expected to assume a leadership role and continue working with the project at their schools as determined by their Team Teacher. This team will form the nucleus for a larger group of students during the academic year.

A variety of activities support the research work of the Scholars during the academic year. Teams maintain an on-going association with the WSSP project faculty, scientists, and staff by using their 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. Some of the reagents and materials 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). Schools are responsible for the purchase of all disposable supplies and some reagents used by their students. The 2018 WSSP will conclude in late spring, 2019, when Student Scholars present their work at the annual **Waksman Forum Poster Session**.

The WSSP will be entering its twenty-sixth year with the start of the 2018 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

2018
WAKSMAN STUDENT SCHOLARS PROGRAM
STUDENT APPLICATION FORM

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
(completion is optional)**

____ American Indian/ Alaskan Native
____ Pacific Islander
____ Black, non Hispanic

**GENDER INFORMATION
(completion is optional)**

____ Hispanic
____ Asian
____ White, non-Hispanic
____ Male ____ Female

GRADE YOU WILL BE ENTERING IN SEPTEMBER 2018 _____

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 2018:



Has your high school participated in past Waksman Student Scholars Programs? __Yes __No

ACADEMIC INFORMATION

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

BACKGROUND INFORMATION

- Extra Curricular Activities - including clubs, volunteering, other summer programs, & employment	Position Held	Dates

NAME & ADDRESS OF A LOCAL COMMUNITY NEWSPAPER, JOURNAL, or MAGAZINE

In the Spring of 2019, information about your demonstrated academic year Leadership accomplishments while working with your Team Teacher on the WSSP in your school will be sent to:

Name _____

How to contact them (Address, email address and or web site)

****** ENDORSEMENT OF YOUR APPLICATION ******

Please have your guidance counselor or a science teacher *and* your parent/guardian endorse your application to the 2018 WSSP by signing below.

I acknowledge and support this application of _____
Name of High School Student (Applicant) (please print)

to attend the summer Institute that is associated with the 2018 Waksman Student Scholars Program. I understand that if selected, s/he is expected to participate completely each day for the full summer Institute activities.

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- attach statement to your application

Please respond to the following two questions, limiting your essay to 200 words:

- 1) Why do you want to participate in the 2018 WSSP summer's Institute?
- 2) Describe your most "interesting" high school activity or situation that deals with science. Why was this interesting? How has this experience influenced you?