

# The Waksman Student Scholars Program

*Sponsored by*

## RUTGERS UNIVERSITY

Waksman Institute

- FOR WHOM:** HIGH SCHOOL STUDENTS who have completed at least one Biology course *{who will assume a leadership role working closely with their school's Team Teacher}*.
- WHEN:** July 5, 2017 – July 21, 2017 *and* during the 2017-2018 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 Bayer USA 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 2017.
  - 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. Lunch is not provided.
  - 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 24, 2017**

*Teachers will be notified of your school's selection into the 2017 WSSP by Friday, April 7, 2017.*

## 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, 2017 – July 21, 2017).
- \* 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 up to two Student Scholars and their Team Teacher. Separate applications for the summer Institute are available upon request for students (Student Application) and their teacher (Teacher Application). Each high school Team is selected using a competitive application process.

Tentatively, the research project for the 2017/2018 year focuses on the genomic sequence analysis of a Duckweed plant from the *Landoltia* 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, 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 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 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 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 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 disposable supplies used by their students. The 2017 WSSP will conclude in late spring, 2018, when Student Scholars present their work at the annual **Waksman Forum Poster Session**.

The WSSP will be entering its twenty-fifth year with the start of the 2017 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](mailto:coletta@waksman.rutgers.edu)

2017  
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  
(optional)**

American Indian/ Alaskan Native  
 Pacific Islander  
 Black, non Hispanic

Hispanic  
 Asian  
 White, non-Hispanic

**GENDER INFORMATION  
(optional)**

Male  Female

GRADE YOU WILL BE ENTERING IN SEPTEMBER 2017 \_\_\_\_\_

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 2017:

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Has your high school participated in past Waksman Student Scholars Programs?  Yes  No

**ACADEMIC INFORMATION**

Science and Mathematics Courses completed as of June, 2017	Grade received	Year Taken

**BACKGROUND INFORMATION**

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

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

Please have your guidance counselor or a science teacher *and* your parent/ guardian endorse your application to the 2017 WSSP by signing below.

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

to the 2017 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**

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 have you worked 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**