WINTER 2023

RUTGERS YOUTH ENJOY SCIENCE

RUYES WATCH

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ABOUT RUYES

The Rutgers Youth Enjoy Science (RUYES) program seeks to encourage youth from groups that are underrepresented in the biomedical sciences to pursue cancer research and healthcare careers.

APPLICATION

Applications are open through February 17, 2023
Visit: www.cinj.org/ruyes
to apply. Email us at
RUYES@cinj.rutgers.edu

Rutgers Youth Enjoy Science [R U Y E S] | Promoting Biomedical Workforce Diversity

RUTGERS Cancer Institute of New Jersey
RUTGERS HEALTH

NCI Designated Comprehensive Cancer Center

APPLICATION

PROCESS

Becoming a RUYES Participant

You must submit an application to be considered for the RUYES research experience. Once your application has been submitted, it will be reviewed by RUYES program staff, application review committee, and Rutgers Cancer Institute of New Jersey Principal Investigators (PI) who are interested in being mentors.

You will complete an interview during our match process, attend a mandatory human resources seminar, and prepare the necessary paperwork to begin onboarding.

TEACHERS

Science teachers from high schools with significant proportions of students from underrepresented backgrounds will have the opportunity to engage in mentored cancer research and curriculum development through RUYES.

STUDENTS

Students from low socio-economic or underrepresented backgrounds in STEM or first generation college students will have the opportunity to engage in mentored cancer research, professional development, and cancer-focused community outreach through RUYES.

Application Timeline

February 17
Application Deadline

February 20
Application Review

February 28
First Round Decisions

March 6, 8 or 10
Zoom Panel Interviews

March 15
Human Resources Presentation

June 23
Undergraduate RUYES Orientation Start Date

UPCOMING EVENTS

FEBRUARY

Topic
Linden - YES (Youth Enjoy Science) Club

Activity
- Demonstration of genetic testing through review of mutations and running a gel electrophoresis during class
- L-YES meeting after school

Hosted by
Pramila Natarajan
Tristan Mondesir
Linden High School

FEBRUARY

Topic
Genetic Counseling as a career and cancer genetic testing

Activity
- Genetic Counselors share the academic process of their career
- Review interpretations of pedigree and family history of cancer

Hosted by
LIFE Center and Genetic Counseling Certificate Program & Woodbridge YES

MARCH

Topic
Linden - YES (Youth Enjoy Science) Club & Woodbridge - YES (Youth Enjoy Science) Club

Activity
- Student field trip to Rutgers Cancer Institute of New Jersey

Hosted by
RUYES & Rutgers Cancer Institute of New Jersey Education and Training Department

PAST EVENTS

DECEMBER

Topic
Woodbridge - YES (Youth Enjoy Science)Club

Activity
- Overview of Radiation Oncology with Dr. Malcom Mattes at W-YES Club

Hosted by
Maria Tolentino
Woodbridge High School

JANUARY

Topic
RUYES Introduction & Presentation at New Jersey City University

Activity
- STEM Career Opportunities & RUYES Info Session in collaboration with NJCU

Hosted by
NJCU, RUYES & Rutgers Cancer Institute of New Jersey Post Doc Angelica Barreto-Galvez

JANUARY

Topic
Rutgers Youth Enjoy Science (RUYES) at Paul Robeson Campus Center

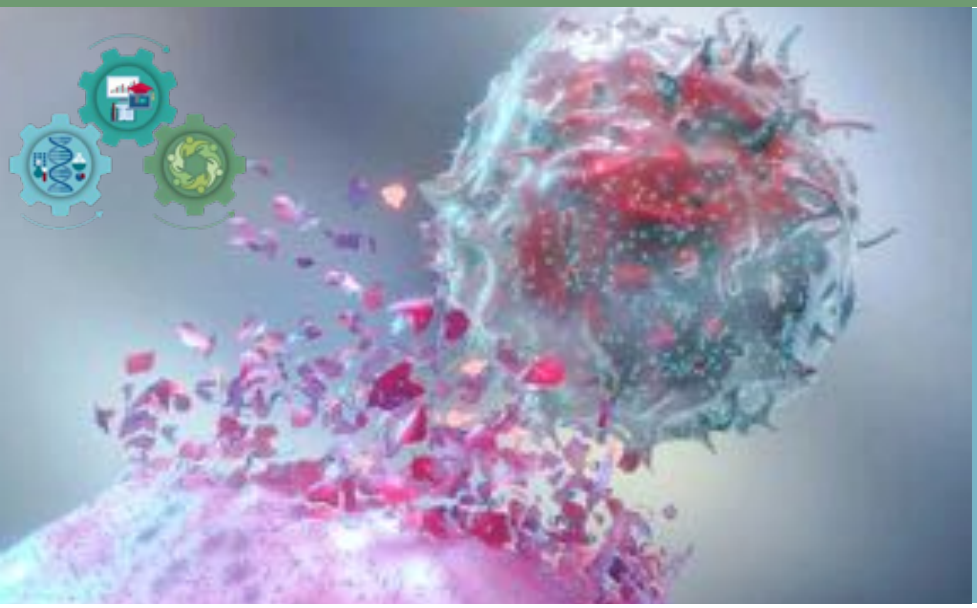
Activity
- RUYES Staff visited Paul Robeson Campus Center in Newark, NJ for information distribution and to meet the students

Hosted by
RUYES Staff

WINTER ISSUE

Cancer Awareness

CERVICAL CANCER



Myths:

Only older women can get cervical cancer.

- The average age for pre-cancerous cervical changes is 29.

After menopause, screening is not necessary.

- Pap smears and HPV testing should continue after menopause, although they may be less frequent. Risks do not decrease with age.

Condoms can prevent cervical cancer/HPV.

- Condoms help prevent sexually transmitted infections (STI), but the HPV via intimate skin to skin contact.

Facts:

The cervix is the lower, narrow end of the uterus. The cervix connects the vagina (the birth canal) to the upper part of the uterus. Cervical cancer is the easiest gynecologic cancer to prevent with regular screening tests and follow-ups. It is also highly curable when found and treated early.

Almost all cervical cancers are caused by HPV. You are more likely to get HPV if you started having sex at an early age, or if you or your partner have had sex with several others. However, any woman who has ever had sex is at risk for HPV.

These factors can increase your risk of cervical cancer:

• Smoking.
• Having HIV (the virus that causes AIDS) or another condition that weakens the immune system.
• Using birth control pills for a long time (five or more years).
• Having many sexual partners (someone with the HPV infection).
• Having multiple full-term pregnancies.

Prevention:

- See your doctor regularly for a Pap and/or HPV test.
- Get the HPV vaccine. It protects against the types of HPV that most often cause cervical, vaginal, and vulvar cancers. It is recommended for preteens (both boys and girls) aged 11 to 12 years, but can be given as early as age 9 and until age 26. The HPV vaccine is also approved for adults ages 27 through 45, but you should talk to your doctor about its benefits.

Screening Options:

- The Pap test is one of the most reliable and effective cancer screening tests available. The Pap test is recommended for all women between the ages of 21 and 29 years old.
- If you are 30 years old or older, you may choose to have a Pap test, or an HPV test, or both tests together.
- For women aged 21-65, it is important to continue getting a Pap and/or HPV test as directed by your doctor—even if you think you are too old to have a child or are not having sex anymore.

References:
www.cancer.org/cancer/cervical-cancer/causes-risks-prevention/risk-factors.html
www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-vaccine-fact-sheet

STUDENTS SOLVING WATER CONTAMINATION ...ONE FILTER AT A TIME

TASHA HESTER
TEACHER AT CAMDEN COUNTY TECHNICAL SCHOOLS

Tasha Hester is a high school science teacher and Rutgers Youth Enjoy Science (RUYES) trainee. As part of her research at Rutgers Cancer Institute of New Jersey in her first year of the program, Ms. Hester practiced algorithmic thinking and utilized this and other skills in the creation of a problem-based learning curriculum which she implemented in her biology class in September.

As part of the curriculum, students in the class began learning about the quality of water in their neighborhoods. Their initial understanding of water quality seemed to be rooted in the belief that poor water quality began and ended with the water crisis in Flint, Michigan, that has received national attention. Closer to home, students turned their focus to the Puchack Well Field, a registered superfund site with the U.S. Environmental Protection Agency. The site is in Pennsauken, New Jersey, which is 10 minutes away from where they attend school.

In the 1970s, various organic and inorganic contaminants were detected in water collected from wells at the Puchack Well Field. (See EPA site for additional information.) Remediation of the site has been underway in various stages since 2010, but the students were inspired to act on their own.

They began to brainstorm solutions and settled upon creating water filters that could potentially rid groundwater of harmful chemicals. Students researched the best materials and designs and then went to work creating them. Some used cheap and accessible things like water bottles, while others implemented technology and used 3D printing. They tested out the filters, first targeting lead. The students believed that if they could filter out elements like lead, they could revise their designs to filter out other harmful chemicals that cause cancer.

During initial testing, 85% of students saw a small decrease in the amount of lead in their water samples. The remaining 15% of students did not make it past the criteria of clear water because of challenges using the charcoal without it staining the water.

The testing will continue through the remainder of the school year. When asked about the experience in RUYES, "Programs like these help teachers to establish relevancy for both themselves and students. It also helps teachers to feel more confident in their content while igniting the inquisitive nature of high schoolers."





A FOCUS ON REAL-WORLD SKILLS AND ENGAGEMENT FOR SUCCESS

PRAMILA R. NATARAJAN
TEACHER AT LINDEN HIGH SCHOOL

Chosen to be one of the teachers for cohort one of the Rutgers Youth Enjoy Science (RUYES) program, I had no idea that this experience would make me reevaluate my teaching process. Through this program, I had an opportunity to work with scientists who were deeply involved in the quest for a cure for cancer. Skills such as asking questions, crafting hypotheses, recognizing different variables, designing experiments, collecting and analyzing data, and inferring from data which are so much a part of the NGSS standards, were part of the everyday lingo at Dr. Wenwei Hu's lab at Rutgers Cancer Institute of New Jersey, where I engaged in two summers of mentored cancer-focused research. It changed my perspective toward the subject I was teaching.

The skills learned in the lab were the essential tools for my students' success in any science field. The most significant change was in my thinking. Rather than focusing on curriculum completion for the year, I was more focused on teaching concepts, skills, and uses of analysis. My dream of introducing the scientists from Dr. Hu's lab to my students was fulfilled when they virtually visited my classroom, thanks to the efforts of the RUYES team. The meeting, although virtual due to COVID restrictions, had a huge impact on my students. Furthermore, the RUYES team arranged for genetic counsellors and other distinguished guests to visit. Additionally, with the collaboration of fellow RUYES trainees at my school, my colleague Tristan Mondesir and student Deanna Lescouflair, we were able to start a research club, Linden Youth Enjoy Science (L-YES), at Linden High School. Meeting high schoolers,

A FOCUS ON REAL-WORLD SKILLS AND ENGAGEMENT FOR SUCCESS (CONTINUED)

undergraduates, and graduates from other schools through the RUYES program made me realize that my students need more academic, social, and professional support to make the transition from secondary to postsecondary education.

This is the critical time when my students need information, motivation, and financial support to aspire to go to college, major in STEM, and sustain the interest once enrolled. With our team effort and the excellent support of the RUYES team, I am certain we will do our best for the future of our students.

LINDEN YOUTH ENJOY SCIENCE CLUB (L-YES)

DEANNA LESCOUFLAIR
STUDENT AT LINDEN HIGH SCHOOL

Creating a Youth Enjoy Science Club at Linden High School began with an idea. The goal was to share the information gained as a Rutgers Youth Enjoy Science (RUYES) trainee within my school. To get the club started, advisors were needed. Two of the teachers in my school were also participating in RUYES, Mr. Mondesir and Mrs. Natarajan. They became the advisors. After acquiring Linden Board of Education approval for the club, we advertised through my school's club fair having over 75 students indicate interest. For the initial meeting, we opened it up to the upper classman. The inaugural Linden YES club meeting had 25 students in attendance.

Our first club meeting featured Ms. Casandra Gabriele, Program Coordinator for RUYES at Rutgers Cancer Institute of New Jersey. She introduced the basics of cancer using the Decoding Cancer curriculum supplement at Rutgers Cancer Institute's LIFE Center. The curriculum enhances learning by encouraging students to transfer their knowledge of biology and genetics to real-life situations using breast cancer as the context. Additional activities encompassed cancer research and expanded upon the purpose of the club and hopeful gains. "I joined because I'm interested in how chemistry plays a part in oncology. I hope to learn more about the lasting effects on cancer treatment," and, "I know that I want to become a doctor in the future, so ...this club excited me. I feel the club would help me pursue my passion in biological sciences," were sentiments students expressed about joining the L-YES Club.

Since the initial meeting, L-YES has hosted monthly guest speakers from Rutgers Cancer Institute. For Breast Cancer Awareness Month, L-YES collaborated with the Linden Volleyball team hosting Dr. Deborah Toppmeyer as she presented "0 to 60 Breast Cancer Overview." In November, Dr. Kyle Payne presented his research and shared his career path. Continuing in December, several RUYES trainees shared their cancer research and offered career advice to students. These guest speakers engaged students in new research while also explaining the responsibilities of a researcher. Some students have stated that having these guest speakers is enlightening in that they see the journey a researcher must travel.

Upcoming Topics:

- February: Genetic Counseling and Interpreting Pedigrees with Family History of Cancer
- February: Cancer Genetic Testing and Learning to Micropipette
- March: Linden-YES visits the Rutgers Cancer Institute of New Jersey
- May: Cancer Health Fair

As the club continues to grow, it is my hope that everyone who attends a meeting will be positively affected. A goal for this club is to make students and their families aware of some of the new research that has been conducted. In many communities, people are only aware of the misconceptions of cancer. Thus, students interested in the club can be a part of the conversation on topics such as screenings, where to get help, treatment options, and how they can help others.