

# Amazing Kids

## SPECIAL EDITION: SUMMER CAMP GUIDE 2023

### INSIDE:

Student from Woodbridge participates in Super Bowl experience

» Page 2

Meet the 45 participants in this year's Prince William Spelling Bee

» Pages 4-5

Hundreds of local students honored by colleges and universities

» Pages 6-8



**INSIDENOVA**  
PRINCE WILLIAM

## Colgan student wins national research prize

### Lateef studied effects of sleep deprivation

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A local student is using her scientific skills to understand and improve the experiences and lives of her peers.

Rania Lateef, a sophomore at Charles J. Colgan Sr. High School, is one of just four high school students to receive the national Neuroscience Research Prize, which recognizes scientific skill and potential for scientific contributions in neuroscience. This is the first time a student from Prince William County has received this prize.

Lateef was honored for a project in which she used an animal model to conduct research focused on the effects of sleep deprivation on behaviors.

"I created an animal model of circadian rhythm and sleep disruption using fruit flies, and I examined whether these disruptions in circadian and sleep physiology could negatively impact life span, mood and addiction-like behaviors," Lateef said. "I found that sleep and circadian

disruptions in flies had a measurable and significant impact on mortality, innate behaviors such as geotaxis and propensity to caffeine."

The idea to research this particular topic struck Lateef after she witnessed and experienced the disruptions caused by the COVID-19 pandemic.

"Even as COVID-19 ravaged the physical health of the population, the youth of the world silently suffered in a crisis of their own," Lateef said. "Divorced from regular social and academic routines, our biological rhythms were in complete disarray and we saw stress, sleep disturbances and substance use soaring in our community. So I pondered whether they were related phenomena."

Witnessing the change in behavior by her peers, combined with her own experiences, sparked Lateef's fascination with the effects of sleep deprivation on health and wellbeing.

"I struggled with a lot of stress because it was all new to me and I saw it in other students. It was easier to see it from a student-to-student perspective, and not a lot of people could see how others were struggling. After COVID-19, we were all a

little confused and stressed."

Lateef's curiosity, combined with the encouragement of her family and science teachers, led her to conduct research into the issue. Her father, Dr. Babur Lateef, is chair of the Prince William School Board. For ethical and practical reasons, Lateef knew she needed a convenient model for her experiments, which led her to use fruit flies. Through her research, she found that sleep deprivation had a negative impact on lifespan and other behaviors.

Since conducting this research, Lateef has applied her findings to her life and advised her peers to do the same.

"I definitely now know that sleep is very important. I sleep earlier now and I can see how it helps me have less stress," Lateef said. "I've taken everything I've learned and applied it to myself and it has helped a lot."

Lateef hopes to apply her scientific research skills and passion for helping others to a future career that involves cognitive neuroscience, psychology and public health.

"I believe the gap between mind and brain must be overcome and I do want to connect molecules to memories and circuits to conversations. I'm also drawn to



Colgan High School student Rania Lateef presents the results of her research. PROVIDED

data science and I see the need to leverage large data to solve interdisciplinary problems," she said.

For being one of the four winners, Lateef received \$1,000 and an all-expenses-paid trip to present her work at the 2023 Child Neurology Society Annual Meeting, in Vancouver, Canada, in October.

