



# VJAS VOICE

THE VIRGINIA JUNIOR ACADEMY  
OF SCIENCE'S QUARTERLY PAPER

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2020 EDITION, ISSUE 2

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“RESEARCH IS TO  
SEE WHAT  
EVERYONE ELSE  
HAS SEEN, AND  
TO THINK WHAT  
NOBODY ELSE  
HAS THOUGHT.”

**ALBERT  
SZENT-GYORGYI**

## VJAS STUDENT GOVERNMENT

**PRESIDENT:**  
SHAN LATEEF

. . .

**VICE PRESIDENT:**  
KARLY RAMNANI

. . .

**SECRETARY:**  
HARRISH GANESH

. . .

**EDITOR IN CHIEF:**  
ARMAN LATEEF

. . .

**COMMUNICATIONS LIAISONS:**  
LAASYA KONIDALA  
ANDREW QI

## WHAT'S NEW?

- **VIRTUAL SYMPOSIUM**

As a byproduct of COVID-19, the Virginia Academy of Science has decided to transition the Annual Symposium to a virtual alternative this year. Stay tuned for more Information!

- **MEMBERSHIP**

We have officially transitioned to a fully online Virtual Symposium! To sign up, please see *page 2*.

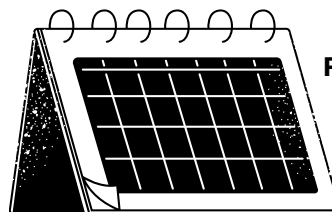
- **JUDGING**

Please help us to make the 2021 VJAS Symposium an event to remember and register today to judge. To sign up, please see *page 3*.

## UPCOMING DATES

**September 1 - January 15:** Deadline to apply for School & Individual Memberships

**January 16 - February 24:** Student Project & Paper Submission Window Opens (Instructions Coming Soon)



**February 24 - March 1:**

Sponsors Confirm  
Submission(Instructions  
Coming Soon)

## WHAT'S INSIDE?

**Page 2, Top** - Chair Spotlight: Se Woong Jeong

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**Page 3** - Judging at the VJAS Virtual Symposium

**Pages 4, 5, 6** - Interview with Dr. Etgen

### CHAIR SPOTLIGHT: SE WOONG JEONG SHAN LATEEF

We are proud to acknowledge the achievement of our VJAS Chairman, Mr. Se Woong Jeong, who was nominated and recognized as a winner of the Regeneron Pharmaceuticals, Inc. 2020 Volunteers of the Year Awards. Each year, more than fifty nominations are submitted and about seven are chosen as final awardees. The Regeneron Volunteers of the Year Awards "honor exceptional employee volunteers who embrace the challenge and responsibility of tackling their community's unmet needs with passion, leadership, dedication, and consistent action".

As a student member and officer of VJAS, I fully appreciate the mentorship and guidance provided by members of our VJAS senior committee. While we learn the process of scientific inquiry and experimentation in school, leadership and activism in science are more elusive skills. As a VJAS officer I have been inspired by our Chairman Mr. Se Woong Jeong, who selflessly dedicates his time to mentoring the next generation of student scientists and leaders. I attended the American Junior Academy of Science (AJAS) 2020 annual meeting in Seattle with Mr. Jeong and was grateful for his wealth of experience as he helped us navigate this professional conference and interface with real life scientists and absorb the implications of their work.

Mr. Jeong's commitment to VJAS is reflection of his own journey in science. Mr. Jeong participated in the VJAS program all four years of his high school,

representing Roanoke Valley Governor's School for Science and Technology in Roanoke, VA. He then went in to the University of Virginia for his undergraduate studies and has been involved as a volunteer judge and board member, before being appointed as the



VJAS Chairman. He was first appointed by the VAS President in 2015, and re-appointed in 2018. Mr. Jeong's professional career led him to Regeneron Pharmaceuticals, Inc. based in Westchester County, New York in 2018, but has continued to serve the role as the volunteer Chairman of VJAS. As part of the award, Regeneron will donate \$500 to the Virginia Junior Academy of Science in Jeong's name.

*We are proud of Mr. Jeong's accomplishments and honored to have him as our chairman.*

#### **Shan Lateef**

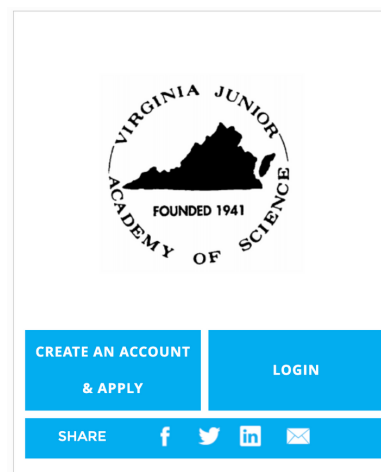
President, VJAS Student Committee

### APPLYING FOR VJAS MEMBERSHIP

Applying for an Individual Membership into the Virginia Junior Academy of Science:

1. Please visit:  
[https://my.reviewr.com/s1/site/VJAS\\_2020](https://my.reviewr.com/s1/site/VJAS_2020)
2. Click on the "Create an Account and Apply" tab.
3. Submit your application.
4. Once your application and payment have been submitted, you will receive a VJAS Membership Certificate.

If you have any trouble applying, or have any questions, comments, or concerns, please contact:  
[associate-director@vjas.org](mailto:associate-director@vjas.org).



### JUDGING AT THE VJAS VIRTUAL SYMPOSIUM SUSAN BOOTH

The Virginia Junior Academy of Science will hold its 2021 VJAS Research Symposium in conjunction with the Virginia Academy of Science Annual Meeting virtually in May 2021. The purpose of this meeting is to give approximately 750 students in grades seven through twelve from throughout the Commonwealth the opportunity to present papers, which will report original research they have conducted.

At least a month before the virtual presentations, judges will receive research papers to read and score online, via the Reviewr web platform. On a date to be determined, papers will be virtually presented every 15 minutes from 9 a.m. through 4:30 p.m. More information about the online judging process and virtual presentations including web links, will follow in early Spring.

#### *How can we accomplish this goal?*

In order to achieve this monumental task many volunteers are needed. Each of the sections requires a Head Judge and 2 or 3 judges. Experts from all fields of science are needed. Each of the sections requires a Head Judge and judges, in which they are needed in all fields. There are both middle and high school categories from which you may choose.

Categories are evaluated and revised each year so you may note different categories below than were available last year. Judging requires one to read and evaluate no more than twenty-two papers, which will be available for access online via Reviewr platform. The judges are asked to be present in the virtual meeting with those papers, on the day of virtual presentations to complete the scoring.

Help us to make this an event to remember and register today by filling out and by submitting this form. Registering today will secure your first choice in categories. You will, at a later date, receive notification of the category you will be judging, access to online research papers to read, scoring rubric, schedule, and other important information. We will update you with more details as the logistics are worked out. We truly appreciate all that you do and hope that you will be willing to contribute your time and effort again.

Please pass this information on to any others who may be interested in assisting VJAS. The entire program is made possible by your volunteer efforts, and its success rests on your willingness to help.

If you have any questions, please do not hesitate to contact me at: 757-897-3104 (phone).

Thank you in advance for your assistance.

**Susan Booth**

VJAS Director

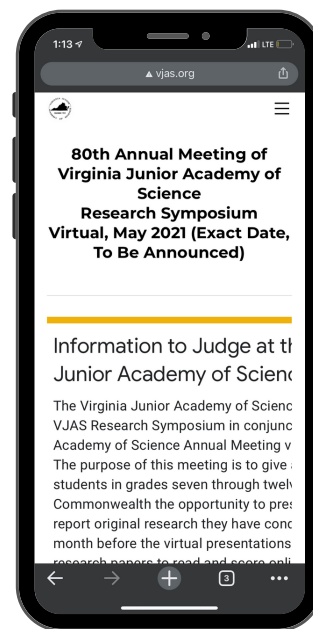
susan.science@gmail.com

Please complete by March 15, 2021 or you may not receive your first choice.

*Disclaimer: Completion of form and reply email from the Academy does not mean you have been accepted to judge.*

**Link to the form:**

**<http://vjas.org/judges.html>**



## INTERVIEW WITH DR. ETGEN HARRISH GANESH

**Harrish:** *In your opinion, how has the COVID-19 pandemic affected the trajectory of students, both in high school and college pursuing a STEM (science, technology, engineering, and math) major or career?*

**Dr. Etgen:** It has made STEM education more difficult for everyone, but especially for those with limited access to high-speed online resources or in difficult domestic situations. For everyone, access to hands-on experiences with science (e.g., lab sessions associated with courses; lab internships) has been curtailed for safety. [...] Students need to experience the ups and downs of research in order to make an informed decision about whether to proceed. Another real concern is the undue impact of COVID-19 on certain segments of the population. There is an historical underrepresentation of women, ethnic minorities, people with disabilities, and first generation college students in all STEM disciplines. The move to distance learning is especially difficult for many of these individuals as they may not have their own computers or access to high quality internet connections, may live in stressful environments that are not conducive to learning, and/or may have domestic responsibilities (e.g., childcare, elder care) that make it more challenging to pursue STEM majors and careers.

**Harrish:** *Following the outbreak of the COVID-19 pandemic, college students engaged in STEM suddenly found their internships canceled and their academic pursuits severely disrupted. Most college students cannot go to class or the lab. If that's the current state of college students, what do you think should middle schoolers and high school students do to pursue their research passion?*

**Dr. Etgen:** Be patient! With effective COVID-19 vaccines coming online soon, I am optimistic that things will begin returning to something resembling pre-COVID circumstances within a year. In the meantime, students late in high school and early in college can begin to delve into the original research literature (primary sources) on topics that interest them. This can be difficult, because this literature can be very technical and often assumes a certain level of background knowledge. But this is where the real data reside, and it's important to begin learning to assess and interpret findings as early in

**Dr. Etgen, cont.:** ne's education as possible. This means you need to understand experimental design, statistics, and the basis for the methods used. You can't critically evaluate data unless you understand the methods on which the data were based, both the strengths and limitations. You also need to understand experimental design (critical controls, blinding researchers to treatment, rigor and reproducibility) and how to validate reagents. Secondary sources can help answer your questions about principles of experimental design and the methods or molecules discussed in the primary literature. But don't rely on secondary sources (e.g., Wikipedia) as authoritative in their interpretation of primary data.

**Harrish:** *And what kinds of resources and support you think, can help counteract these disruptions?*

**Dr. Etgen:** There are lots of good web-based resources. These include materials available at public radio/television stations, materials developed by the National Science Foundation, and by the National Science Teachers Association. In terms of primary resources, PubMed is a great resource for biomedical and health-related research. Some journals (known as open access journals) make original research papers publicly available as soon as they are published. Other make them available after a year. Professional societies also have websites that can be a rich source of information.

**Harrish:** *As you may know, almost all summer programs related to research, in-person lab training got canceled whereas some did virtual programs. Do you think the virtual programs can be equally effective in comparison to in-person programs?*

**Dr. Etgen:** Virtual programs can be quite effective for some disciplines. For example, in my own field of neuroscience, programs focusing on computational skills have been quite successful in the virtual environment. Likewise, programs that take advantage of publicly accessible databases can provide opportunities for students to explore a variety of research questions from bioinformatics to molecular modeling to epidemiology. Well-structured virtual programs can also provide good

## INTERVIEW WITH DR. ETGEN, CONT. HARRISH GANESH

**Dr. Etgen, cont.:** instruction in hypothesis testing, experimental design, statistics and scientific rigor, which are the foundation of all research. What they cannot provide is the hands-on experience of doing lab work, documenting it, learning how to troubleshoot a protocol when things don't work as they should, and re-evaluating a hypothesis based on reliable data.

**Harrish:** *Are virtual programs here to stay post-COVID? Is it possible to learn research remotely even if you are connected with career scientists?*

**Dr. Etgen:** I do think that some programs will remain virtual post-COVID. They can provide broad access to current information at a reduced cost. And as described in my answer to question 4, much can be learned in the virtual environment.

**Harrish:** *As pandemic halted much of the world, did scientists shifted gears to get answers more quickly? Do you think the current scientific publication process takes too long and that there should be some fundamental changes required to handle responses to pandemics more efficiently?*

**Dr. Etgen:** No, I don't think that the fundamental process changed. Many scientists did turn their attention to the new virus, and the exchange of information across countries (e.g., sharing the RNA sequence) and the availability of new methods (e.g., RNA-based vaccines) accelerated progress. But I don't think any corners were cut. I am also a strong believer in the importance of critical peer review of the scientific rigor of new findings. Better to take a bit more time to ensure the integrity of the findings and provide cautious interpretation. People will only become more suspicious of science if premature findings are found to be flawed and progress is reversed because of it.

**Harrish:** *Should there a better medium that promotes a faster, freer exchange of information and ideas across borders?*

**Dr. Etgen:** There has been a movement for many years to provide free, open access to original research reports. As noted above, some journals now publish with open access. Moreover, research that is supported by federal grants must be available to all within a year of publication. There are also thousands of national and international collaborations that are accomplishing these goals. High speed internet technology has made these collaborations easier and more productive.

**Harrish:** *Even the best science communication is only effective when the world is open to listening to what scientists have to say. Do you think we should reconsider how we communicate science? Do you think there has to be some structured science communication training that starts early at the middle/high school level and also for senior career scientists to gain some exposure to communicating their work to wider/different audiences?*

**Dr. Etgen:** I do think it's important for middle and high school students to understand the scientific process and the importance of hypothesis testing. They need to know how information is acquired and why assumptions that once seemed to be established fact may change as science proceeds. By understanding the process of science and how new knowledge supplements and perhaps completely changes our understanding of the universe, it's easier for citizens to understand why scientists can't always provide easy, straightforward answer to questions. It would be helpful if scientists at all career stages were better trained to communicate their work to diverse audiences. Beginning to train students to do this early in their education can only help. Much scientific research is funded by taxpayer dollars, and we must be able to explain to taxpayers what we're doing (from the basics of the scientific process to justification for specific research approaches), why it's important, why progress is sometimes slow and why changes to our understanding is inevitable.

**Harrish:** *Why is it important now, during a pandemic where resources are limited, to continue promoting student research?*

**Dr. Etgen:** Today's students are tomorrow's researchers. We can't afford to lose a generation of future pioneers and leaders. And because there is overwhelming evidence that complex problems are solved more effectively by diverse groups, it's especially important that we ensure that the future STEM workforce reflects the diversity of the nation.

**Harrish:** *What was one thing you learned from doing and presenting research that you wish you had known before you started?*

**Dr. Etgen:** The hardest thing for me was coming to understand how important it is to communicate your ideas and findings in an

CONTINUED ON PAGE 6

## INTERVIEW WITH DR. ETGEN, CONT. HARRISH GANESH

**Dr. Etgen, cont.:** approachable way to individuals who are not experts in my field. Being able to explain what you're doing and what it means, without talking over listeners' heads or making overly simplistic conclusions and extrapolations, can be a challenge. An important aspect of this is to thoughtfully address concerns about the use of animals in research in a way that acknowledges the legitimate concerns of those who care sincerely about animal rights.

*Pictured, Right:*  
**Anne M. Etgen**

Dr. Etgen is currently Professor Emerita of Neuroscience, Psychiatry and Behavioral Sciences, Obstetrics & Gynecology and Women's Health, and Pediatrics. During her career at Einstein, her research was funded by NIMH, NICHD, NINDS and NIA as well as the National Science Foundation (NSF).

